Test Report

Product Name:	Wireless Speaker System Speaker
Model No.:	HJ580SA-S, IPB-125-S
Brand Name:	Hamilton Beach, Starlite
FCC ID:	BGR580SAS
Applicant:	Starlight Electronics Co.,Ltd
Address:	6/F.,Shing Dao Ind. Blg,232 Aberdeen Main Road, Hong Kong
Date of Test:	2009-08-07 to 2009-08-10
Investigation Requested:	FCC Part 15 Subpart C
Conclusions:	The submitted product COMPLIED with the requirements of FCC Part 15: 2007, Subpart C. The EMC tests were performed in accordance with the standards described above.

Prepared By: Yuan Miaoling

Reviewed By: Yao Dao

Issued Date: 2009-08-10

Contents

1.General Information

1.1. EUT Description

Model name:	Wireless Speaker System Speaker
Model number:	HJ580SA-S, IPB-125-S
Brand name:	Hamilton Beach, Starlite
FCC ID:	BGR580SAS
Operation frequency:	2400MHz to 2480MHz
Test Channel:	CH1: 2407MHz, CH2: 2443MHz, CH3: 2479MHz
Power Supply:	14.8V DC

1.2. Applicant Details

Applicant:	Starlight Electronics Co.,Ltd.
Address:	6/F.,Shing Dao Ind. Blg,232 Aberdeen Main Road, Hong Kong

1.3. Test Facility

3m Anechoic Chamber: FCC
Registration Number: 597719
January 18, 2005

EMC Lab. Certificated by Nemko, Shanghai
Aut. No.: ELA505
May 30, 2007

Industry Canada
Registration Number: 6664A
August 22, 2006

Certificated by China National Accreditation Service for Conformity Assessment [CNAS]
CNAS Number: L0307

Name of Firm: Guangdong Electronic & Electrical Products Inspection and Supervision Institute. [CGEL]

Site Location: 45 South Street Shayongnan village Sanyuanli Guangzhou China.
Telephone: 86-20-36377897
Fax: 86-20-36377049

2. Test Information and Result Summary

2.1. Test Statement

The test results in the report apply only to the unit tested by CGEL.
There was no deviation from the requirements of test standards during the test.

2.2. EUT Modification

No modification.

2.3. Investigations Requested

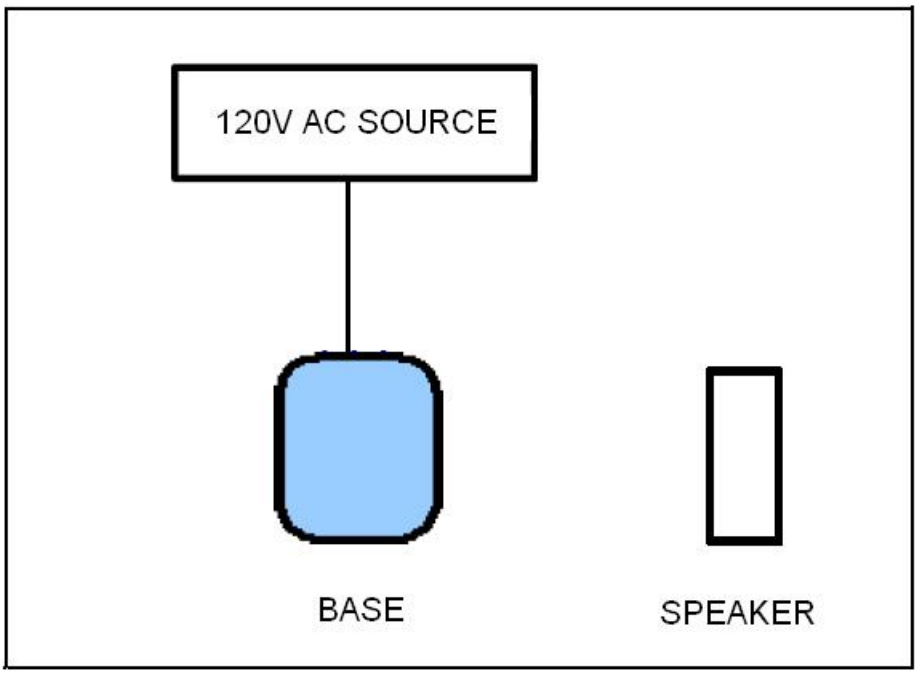
Perform Electromagetic interference measurement in accordance with FCC Part 15: 2006, Subpart C and ANSI C63.4:2003 for FCC Certification.

2.4. Test Standard and Results Summary

Test standard and result summary			
Test description	Test Requirement	Limited	Test Result
Conducted Emission	FCC 47CFR 15.207	Table 15.207	PASS
Radiated Emission	FCC 47CFR 15.249(c)	Table 15.209	PASS
Band Edge Measurement	FCC 47CFR 15.249(d)	50 dB below the level of the fundamental or to the general radiated emission limits in section 15.209	PASS

Remark: N/A- not applicable

2.5. Configuration of System Under Test



2.6. Measurement Uncertainty

Item	Item	Uncertainty	Remark
1	Uncertainty for Conducted Emission Test	2.5dB	/
2	Uncertainty for Radiated Emission Test	3.7dB	Under 1GHz
3	Uncertainty for Radiated Emission Test	3.5dB	1GHz-7GHz
4	Uncertainty for Radiated Emission Test	3.9dB	Above 7GHz

3. Conduct Emission

Test requirement:	FCC 47CFR 15.249
Test method:	ANSI C63.4:2003
Class/Severity:	Table 15.207
Test result:	N/A

The EUT is operated by 14.8V DC battery power. Therefore power line conducted emission was deemed unnecessary.

4. Radiated Emissions

Test requirement:	FCC 47CFR 15.249
Test method:	ANSI C63.4:2003
Test date:	2009-08-07
Environment condition:	Temperature:21 to 22 °C, Humidity: 55 to 56 %RH, Pressure: 101.0kPa
Conclusion::	Pass

4.1. Test equipment and test site

Frequency rang: 30~1000MHz

Item	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Due date
1	EMI Receiver	R&S	ESIB7	2009/03/28	2010/03/27
2	Antenna	R&S	HL-562	2008/08/14	2009/08/13
3	RF Cable	R&S	/	2008/08/14	2009/08/13
4	RF Cable	R&S	/	2008/08/14	2009/08/13
5	RF Cable	R&S	/	2008/08/14	2009/08/13
6	3m anechoic chamber	ETS	RFD-F-100	2009/05/23	2010/05/22
7	Shielding Room	ETS	RFD-100	2009/05/23	2010/05/22

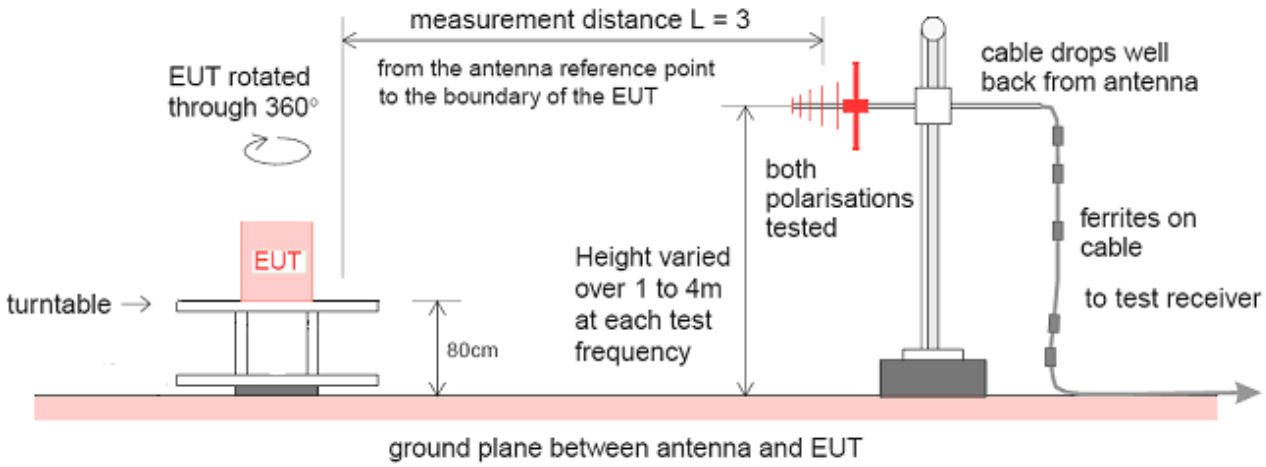
Frequency rang: 1GHz~7GHz

Item	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Due date
1	EMI Receiver	R&S	ESIB7	2009/03/28	2010/03/27
2	Antenna	Xibao	GH18H	2009/05/23	2010/05/22
3	HF Cable	Xibao	/	2009/05/23	2010/05/22
4	3m anechoic chamber	ETS	RFD-F-100	2009/05/23	2010/05/22
5	Shielding Room	ETS	RFD-100	2009/05/23	2010/05/22

Frequency rang: above 7GHz

Item	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Due date
1	Analyzer	HP	8562A	2009/07/01	2010/06/30
2	Antenna	Xibao	GH18H	2009/05/23	2010/05/22
3	HF Cable	Xibao	/	2009/05/23	2010/05/22
4	3m anechoic chamber	ETS	RFD-F-100	2009/05/23	2010/05/22
5	Shielding Room	ETS	RFD-100	2009/05/23	2010/05/22

4.2. Test setup



Note: The EUT system was put on a wooden table with 0.8m heights above a ground plane.

4.3. Test Procedure

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations.

The frequency range from 30MHz to 10th harmonic are checked.

The test mode (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported with antenna in horizontal and vertical polarization on Section 4.4.

4.4. Limits and Test Result

The field strength of emissions from intentional radiators:

Fundamental frequency	Field strength of fundamental		Field strength of harmonics	
MHz	mV/m	dBμV/m	μV/m	dBμV/m
2400-2483.5	50	94	500	54

Limits for Radiated Emissions –15.209

Frequency Range	Limits		Measurement Distance
MHz	μV/m	dBμV/m	m
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
960-1000	500	54.0	3
Above1000	54dBμV/m (Average) 74dBμV/m (Peak)		3

Remark:

(1) In the emission table above, the tighter limit applies at the band edges.

(2) The emission limits shown in the above table are based on measurement employing a CISPR quasi –peak detector and above 1000MHz are based on measurements employing an average detector.

(3) According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

(4) Measurement Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Test Result

The frequency range from 30MHz to 1000MHz and above 1GHz is investigated. Please see the following pages.

Radiated emissions within the restricted bands were performed Quasi-Peak measurement below 1GHz, Peak measurement and Average measurement above 1GHz.

Quasi-Peak measurement below 1GHz were performed using a Quasi-Peak detector with RBW/VBW setting as 120kHz/ 300kHz.

Average measurement from 1GHz to 7GHz were performed using a peak detector with RBW 3MHz/VBW 10Hz.

Average measurement above 7GHz were performed using a peak detector with RBW 1MHz/VBW 10Hz.

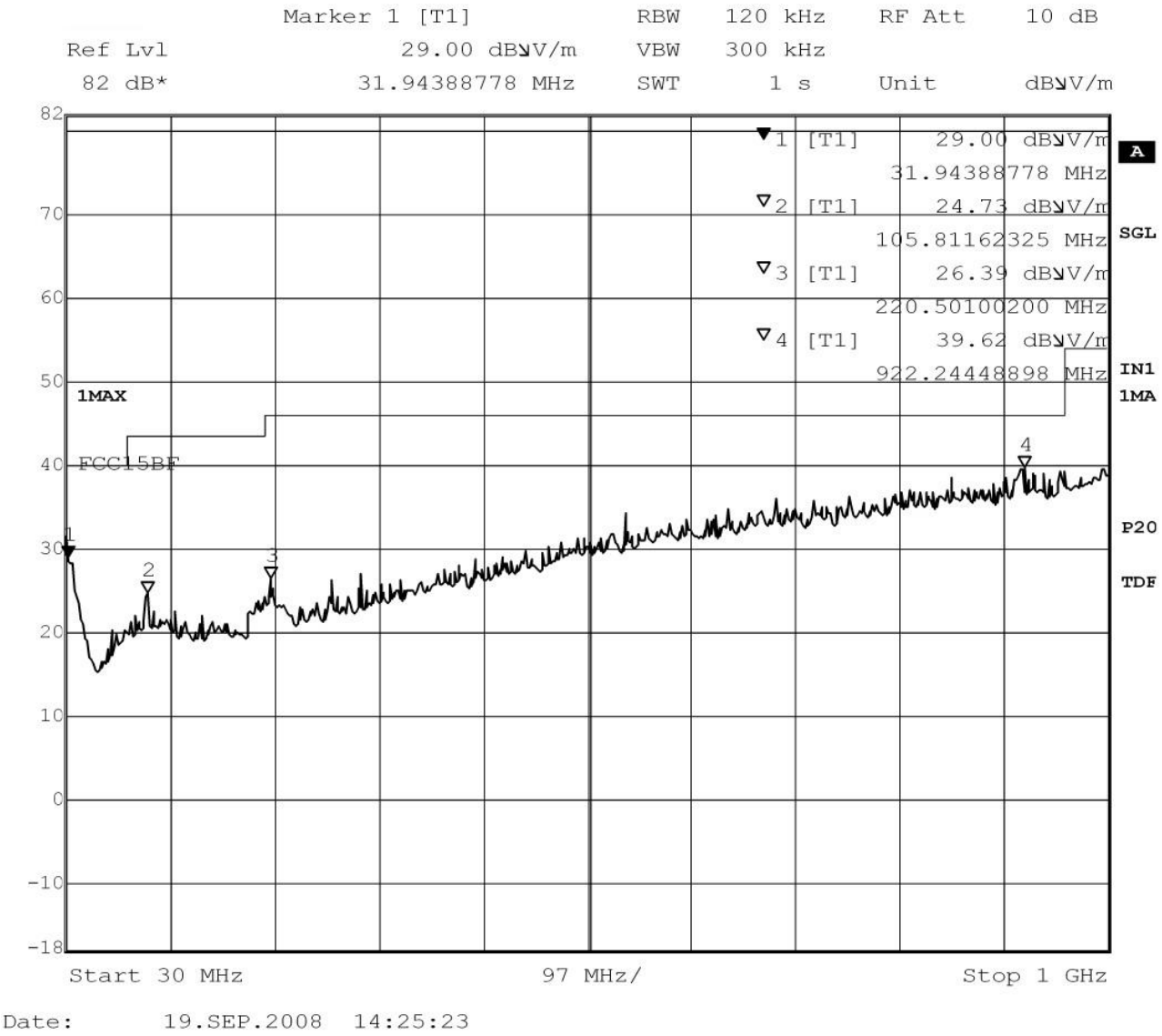
Peak measurement from 1GHz to 7GHz were performed using a peak detector with RBW/VBW setting as 3MHz/ 3MHz.

Peak measurement above 7GHz were performed using a peak detector with RBW/VBW setting as 1MHz/ 1MHz.

All the emissions except fundamental from 7GHz~24GHz are at least 15dB below the limit, and do not record.

Test Results of Radiated Emissions:

Frequency Range: 30MHz-1000MHz (Vertical)

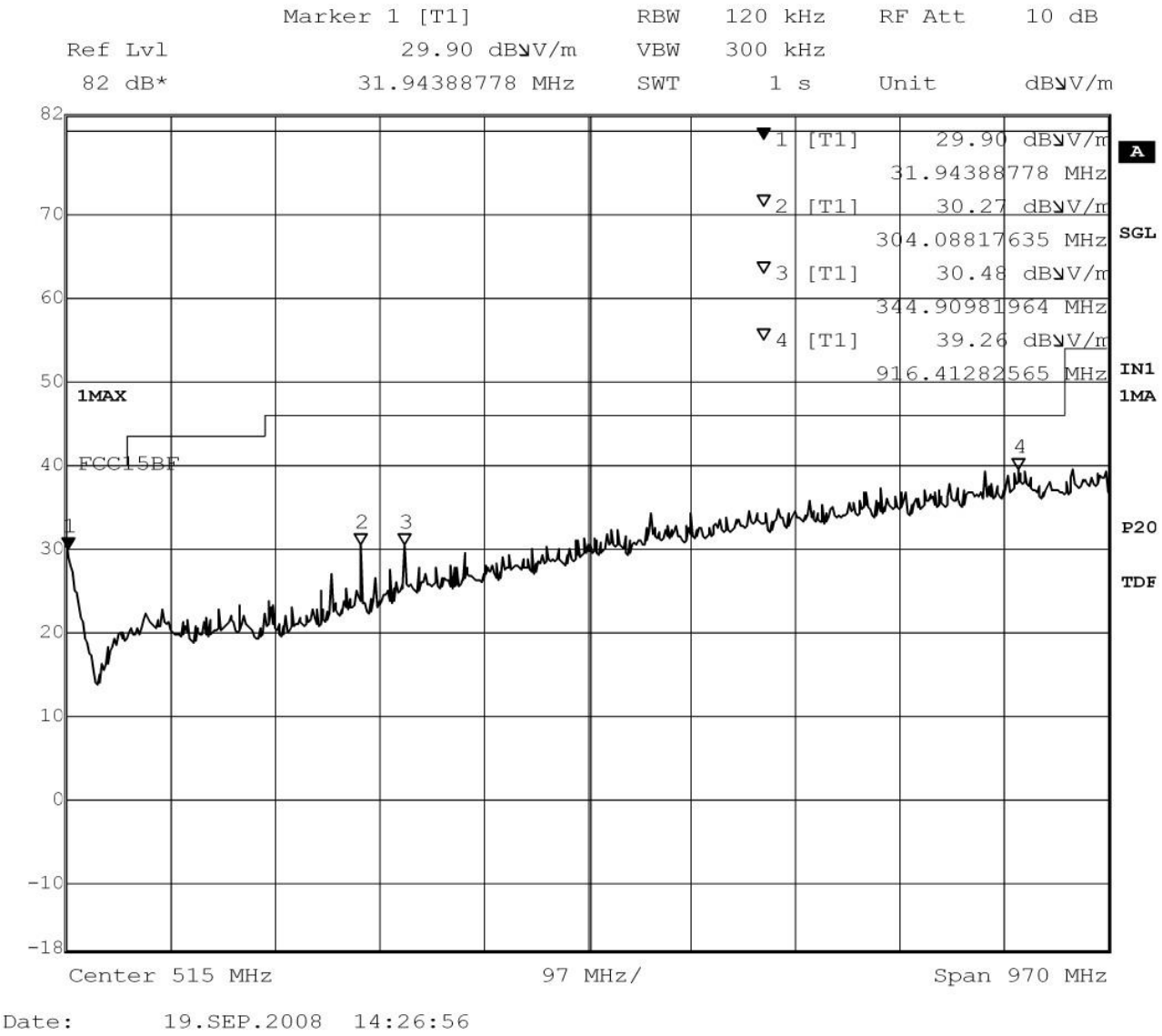


Frequency MHz	Emission Level dB μ V/m	Limits dB μ V/m	Measurement	Detector
31.94	29.00	40.00	QP	QP
105.81	24.73	43.50	QP	QP
220.50	26.39	43.50	QP	QP
922.24	39.62	46.00	QP	QP

Remark: Emission Level=Reading.

Test Results of Radiated Emissions:

Frequency Range: 30MHz-1000MHz (Horizontal)

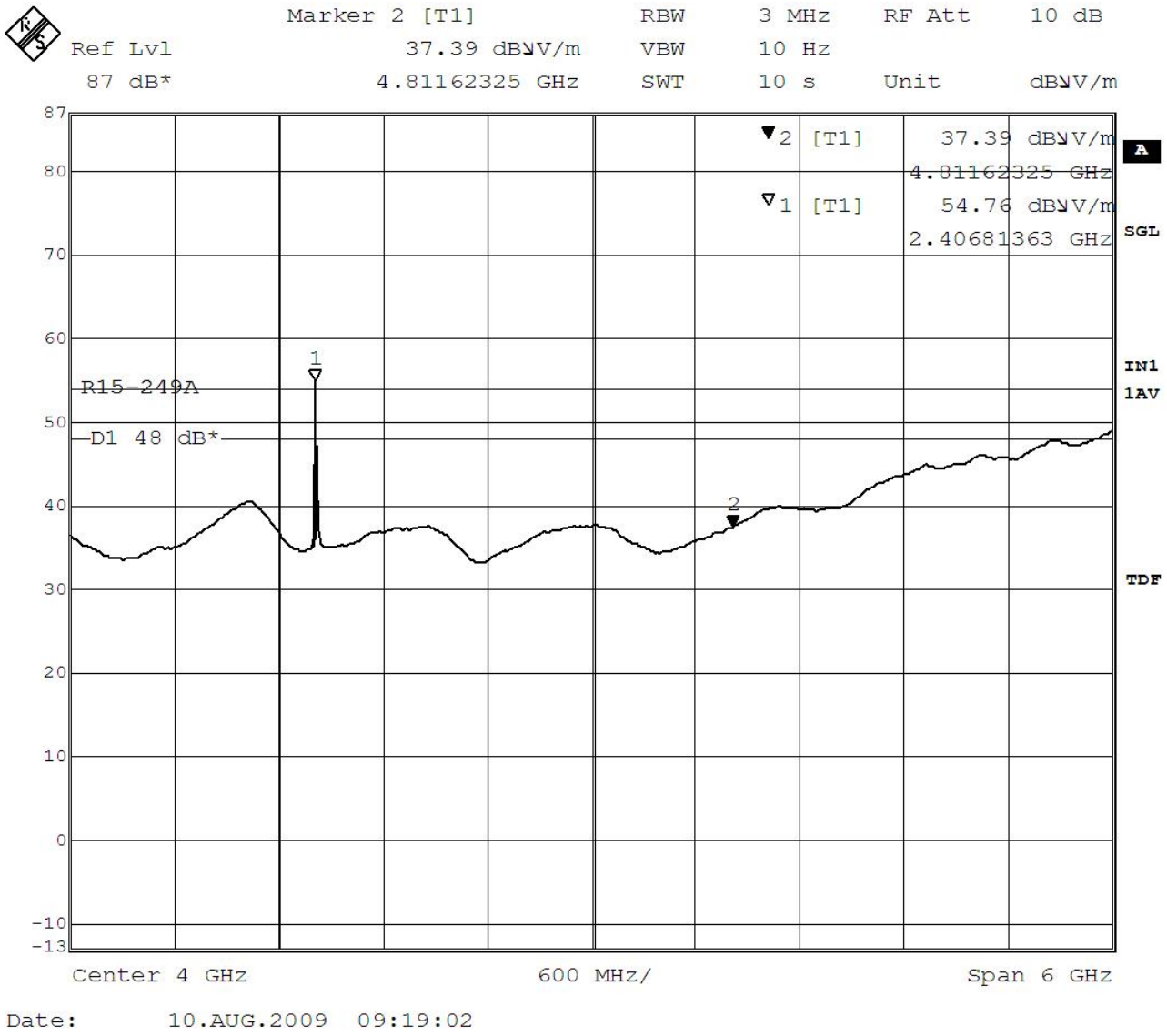


Frequency MHz	Emission Level dB μ V/m	Limits dB μ V/m	Measurement	Detector
31.94	29.90	40.00	QP	QP
304.09	30.48	46.00	QP	QP
344.91	30.48	46.00	QP	QP
916.41	39.26	46.00	QP	QP

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH1(2407MHz)

Frequency Range: 1GHz-7GHz (Vertical)

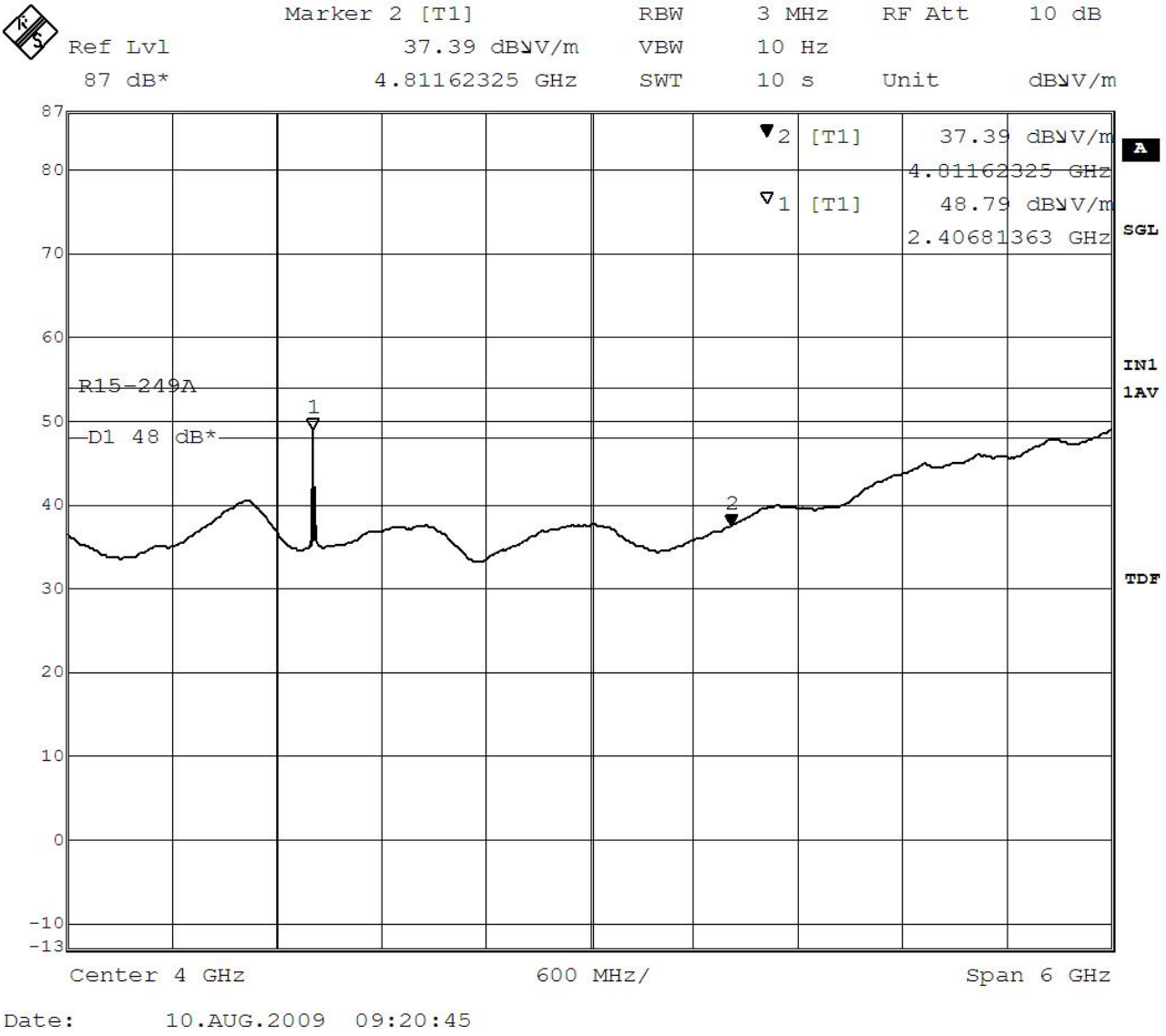


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2407	54.76	94.00	Average	Peak
4011	37.39	54.00	Average	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH1(2407MHz)

Frequency Range: 1GHz-7GHz (Horizontal)

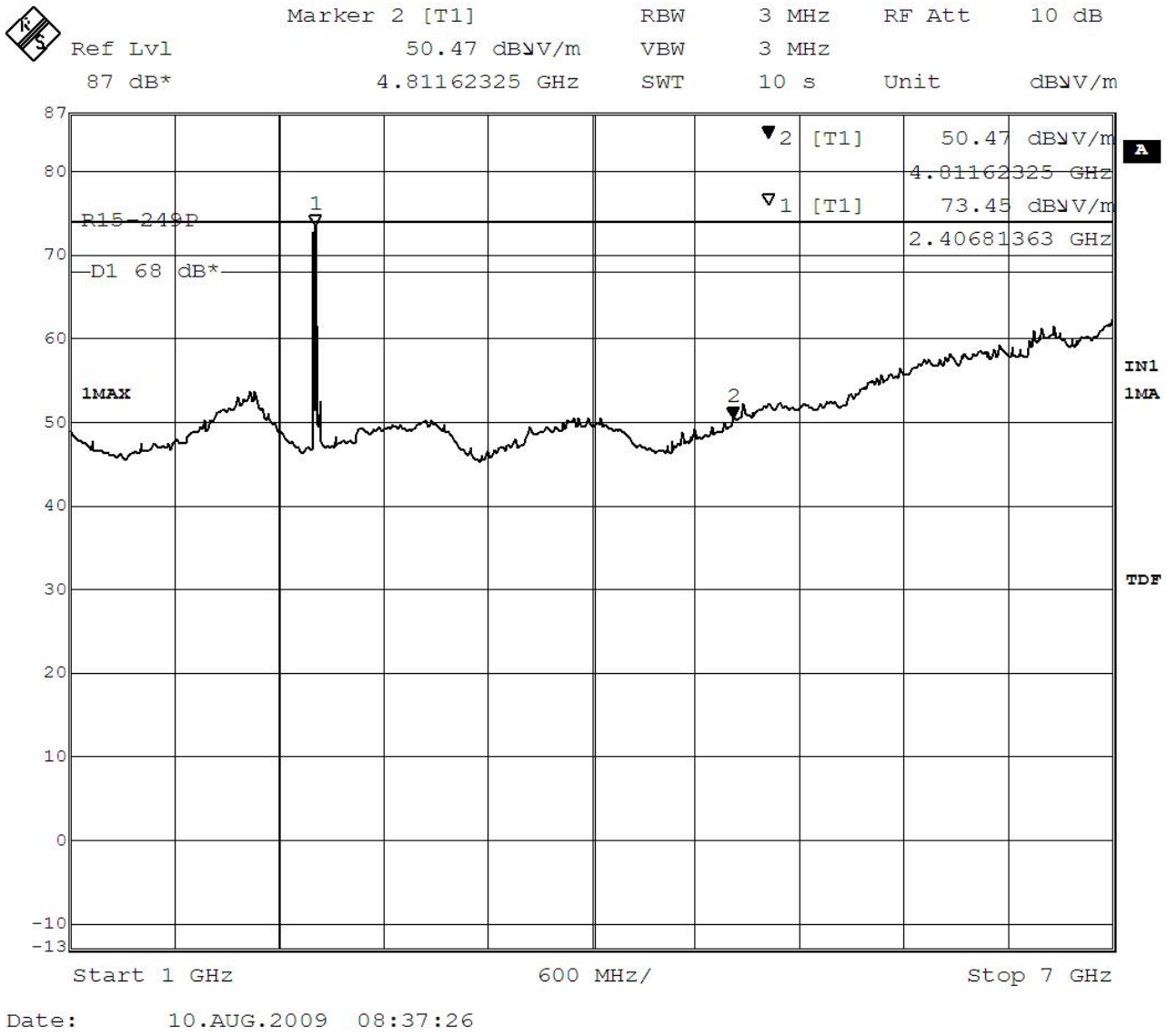


Frequency MHz	Emission Level dB μ V/m	Limits dB μ V/m	Measurement	Detector
2407	48.79	94.00	Average	Peak
4011	37.39	54.00	Average	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH1(2407MHz)

Frequency Range: 1GHz-7GHz (Vertical)

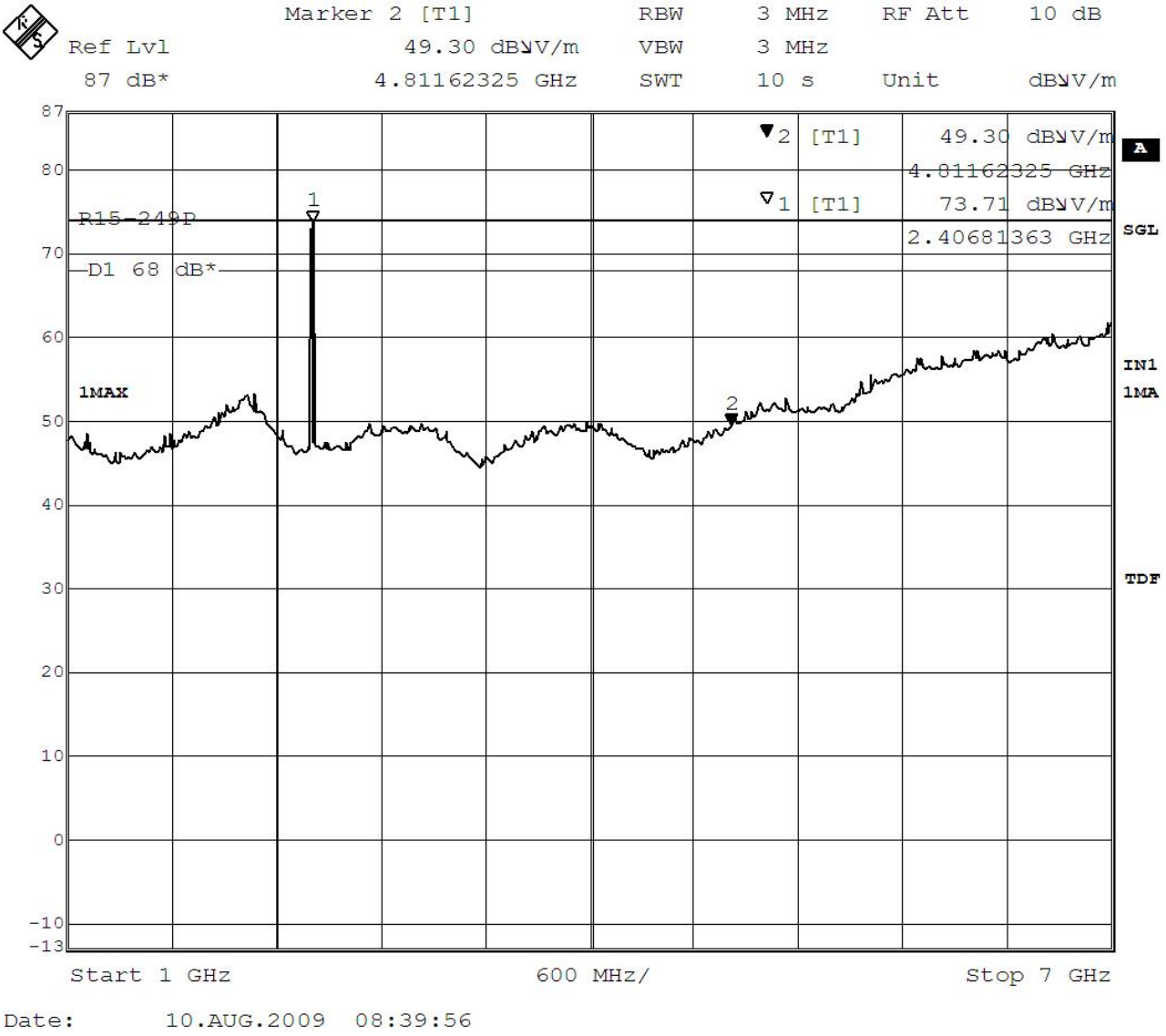


Frequency MHz	Emission Level dB μ V/m	Limits dB μ V/m	Measurement	Detector
2407	73.45	114.00	Peak	Peak
4011	50.47	74.00	Peak	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH1(2407MHz)

Frequency Range: 1GHz-7GHz (Horizontal)

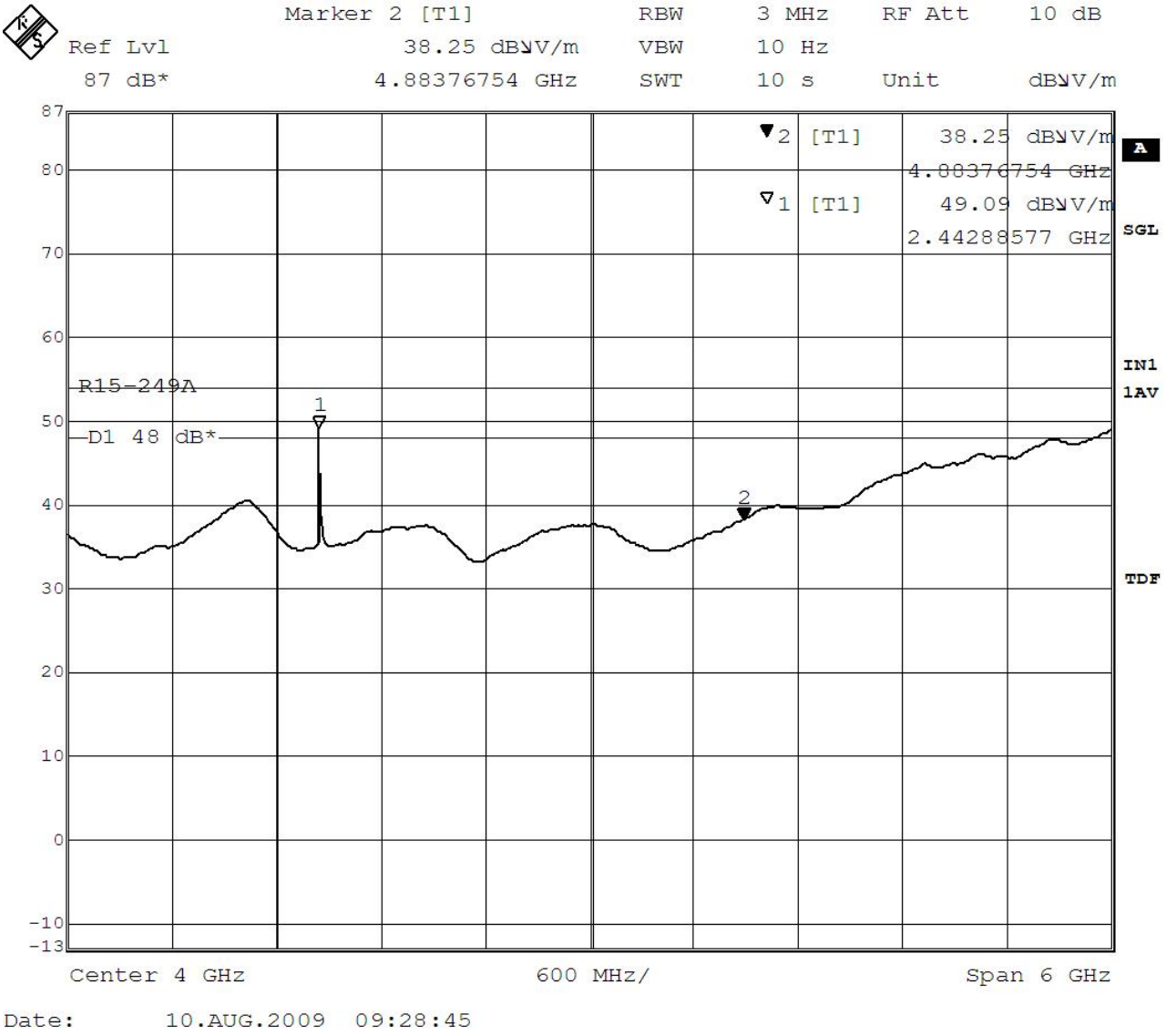


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2407	73.71	114.00	Peak	Peak
4011	49.30	74.00	Peak	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH2(2443MHz)

Frequency Range: 1GHz-7GHz (Vertical)

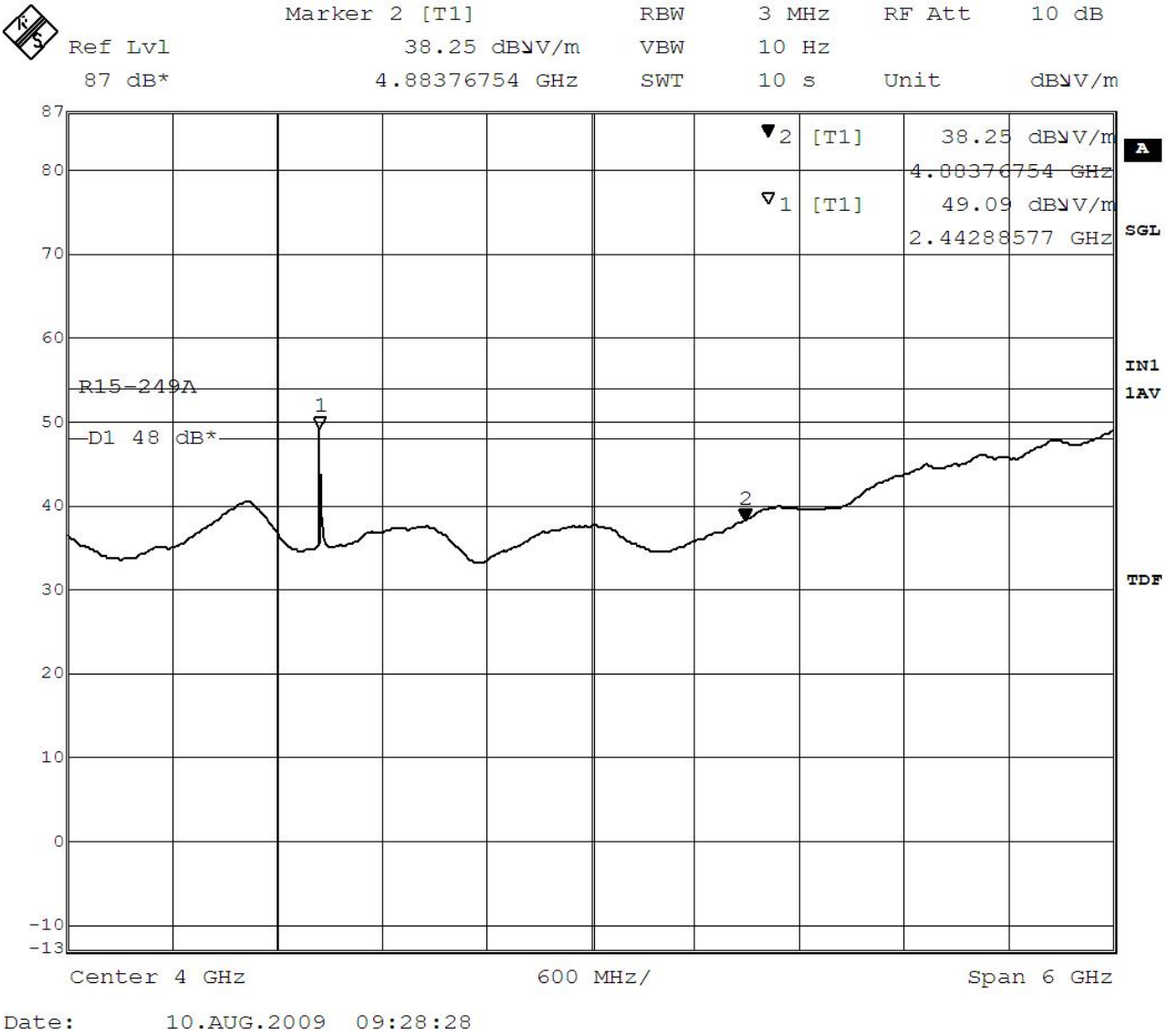


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2443	49.09	94.00	Average	Peak
4003	38.25	54.00	Average	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH2(2443MHz)

Frequency Range: 1GHz-7GHz (Horizontal)

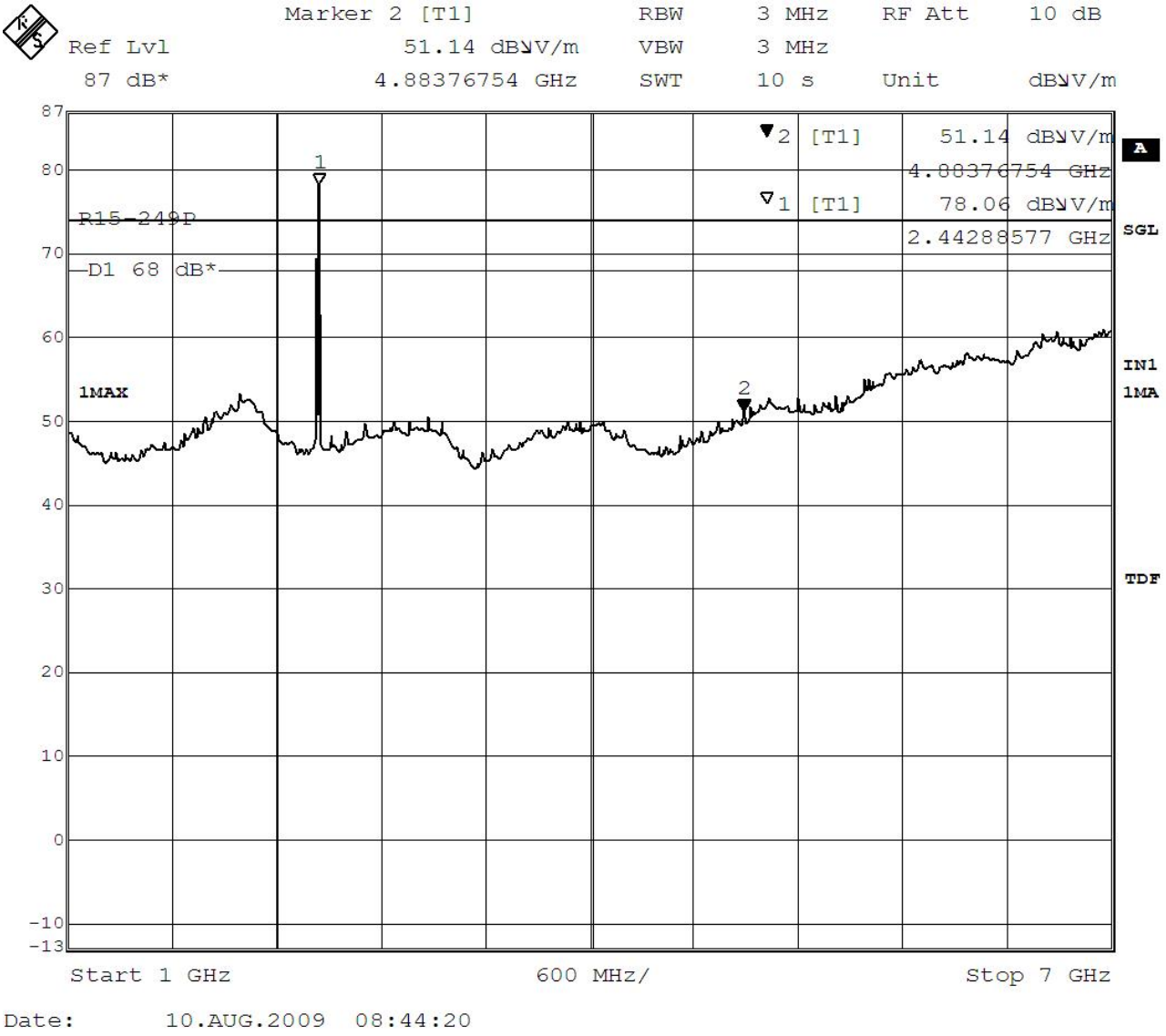


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2443	49.09	94.00	Average	Peak
4003	38.25	54.00	Average	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH2 (2443MHz)

Frequency Range: 1GHz-7GHz (Vertical)

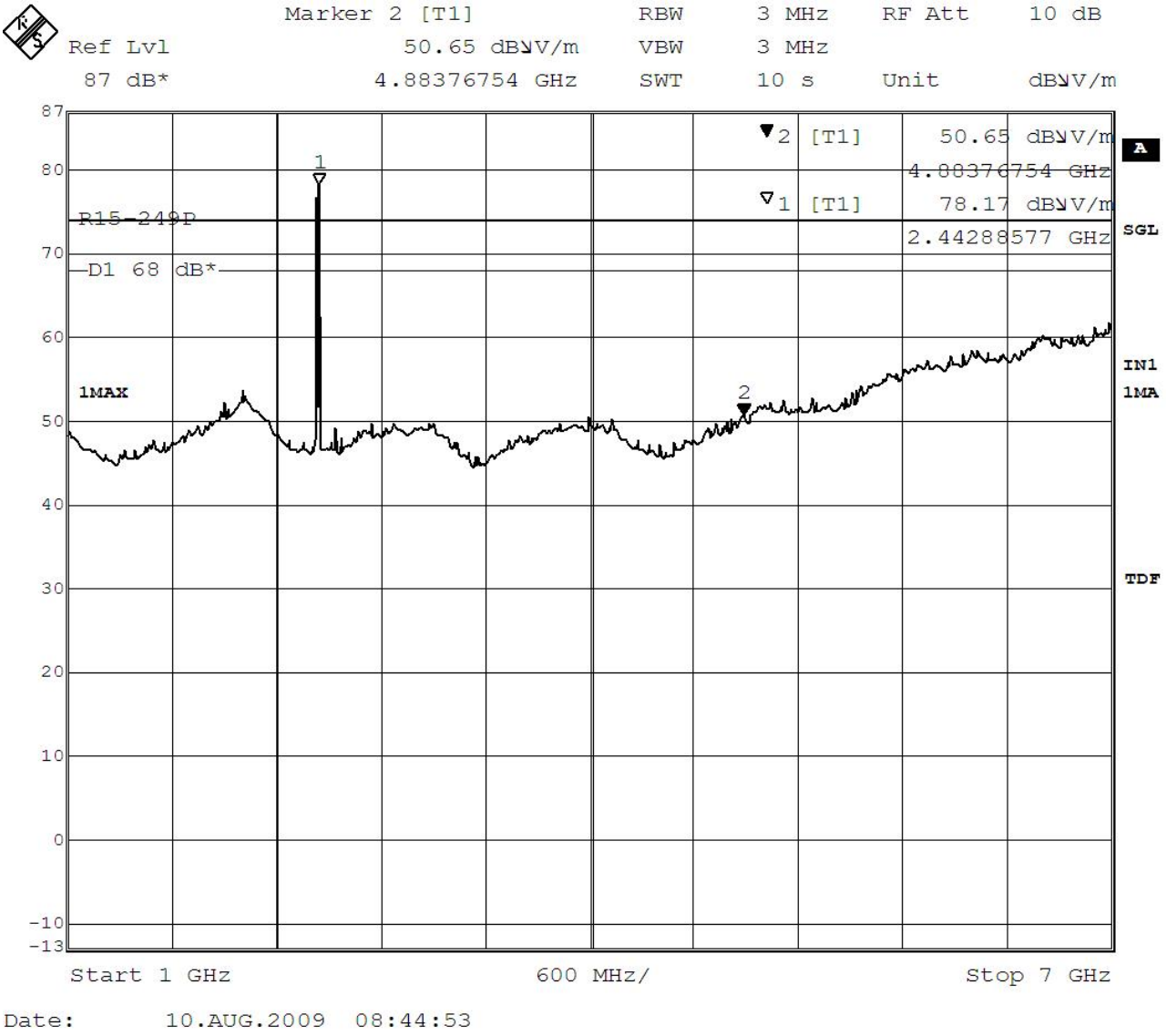


Frequency MHz	Emission Level dB μ V/m	Limits dB μ V/m	Measurement	Detector
2443	78.06	114.00	Peak	Peak
4003	51.14	74.00	Peak	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH2 (2443MHz)

Frequency Range: 1GHz-7GHz (Horizontal)

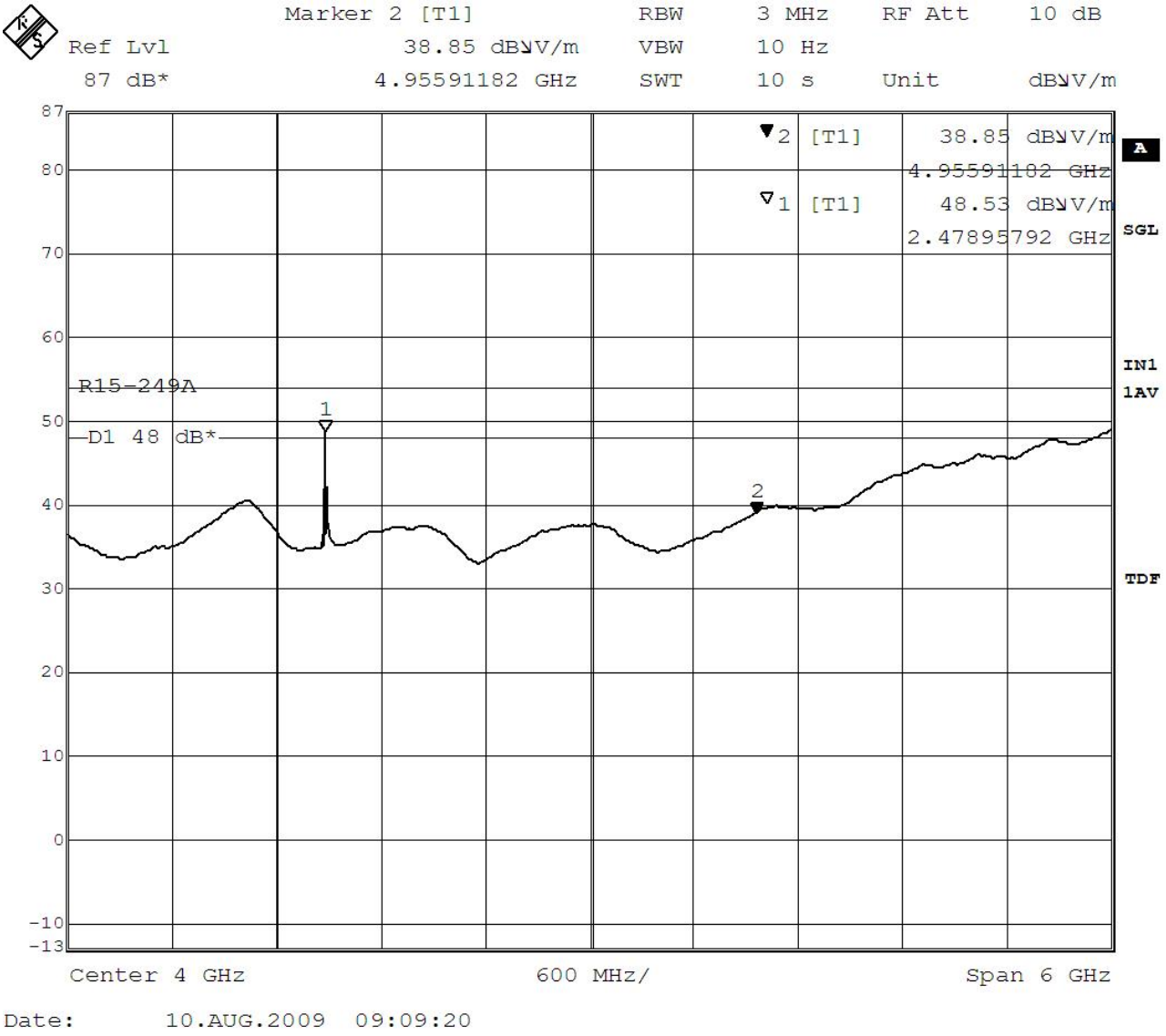


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2443	78.17	114.00	Peak	Peak
4003	50.65	74.00	Peak	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH3 (2479MHz)

Frequency Range: 1GHz-7GHz (Vertical)

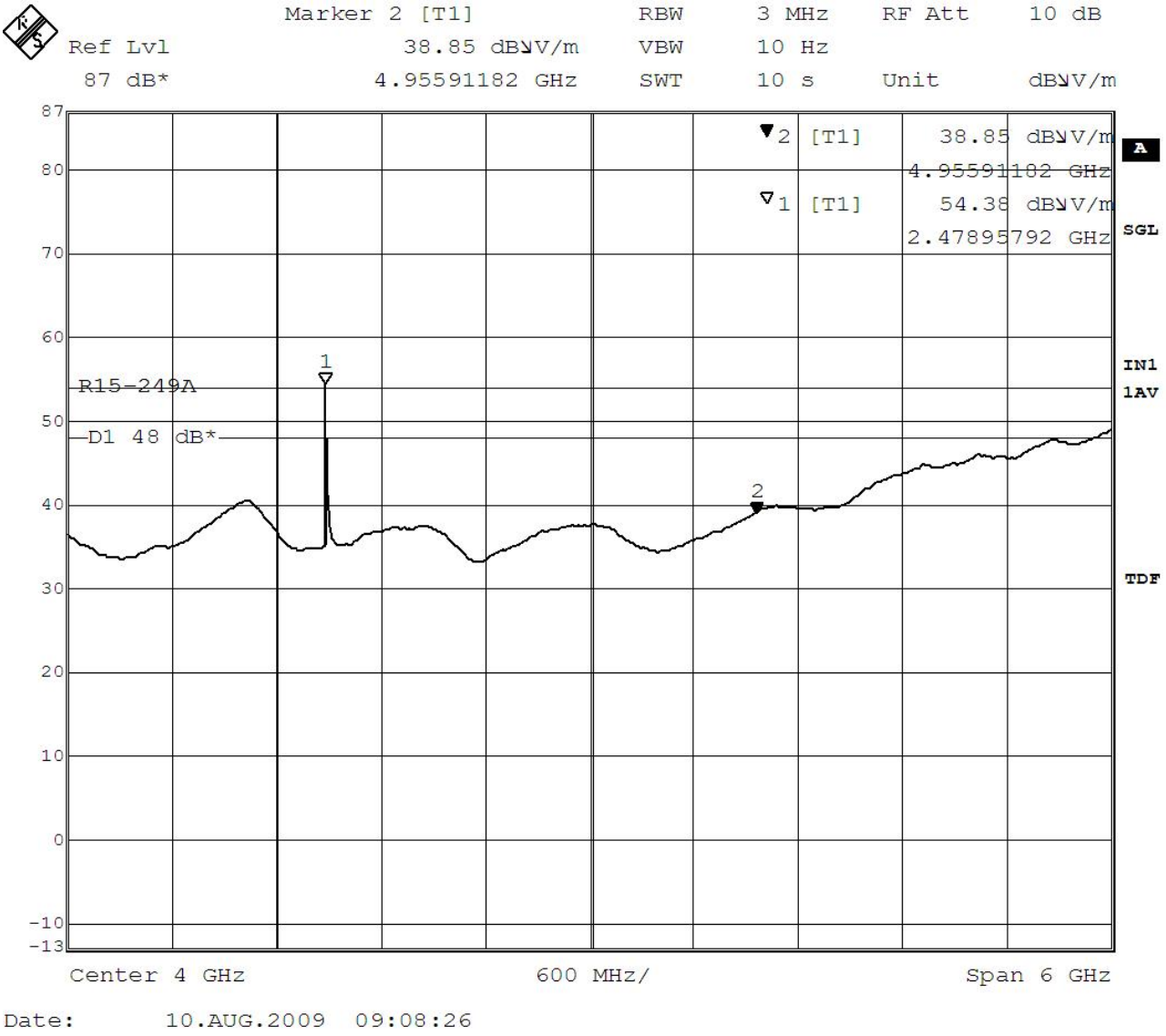


Frequency MHz	Emission Level dB μ V/m	Limits dB μ V/m	Measurement	Detector
2479	48.53	94.00	Average	Peak
4956	38.85	54.00	Average	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH3 (2479MHz)

Frequency Range: 1GHz-7GHz (Horizontal)

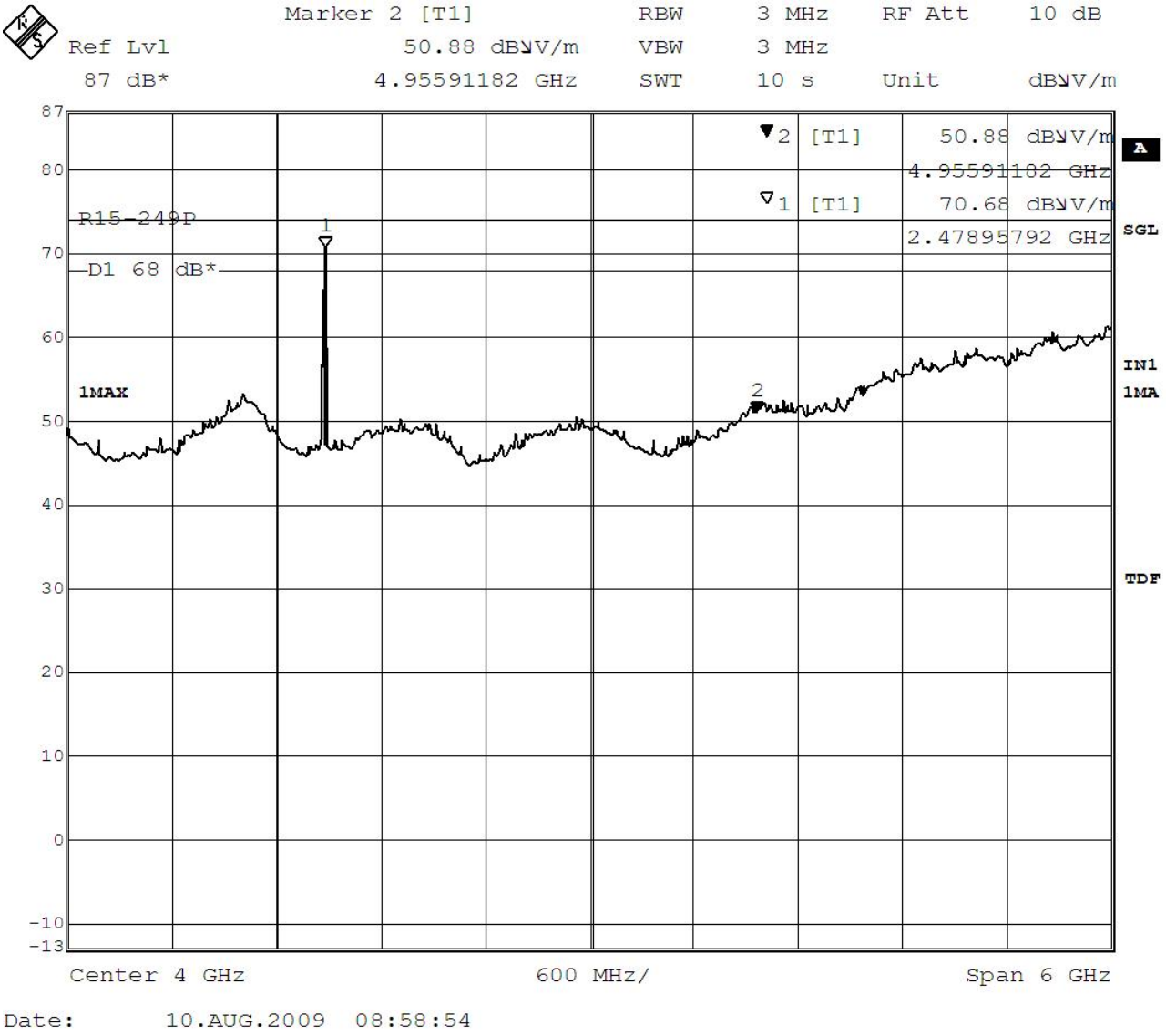


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2479	54.38	94.00	Average	Peak
4956	38.85	54.00	Average	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH3 (2479MHz)

Frequency Range: 1GHz-7GHz (Vertical)

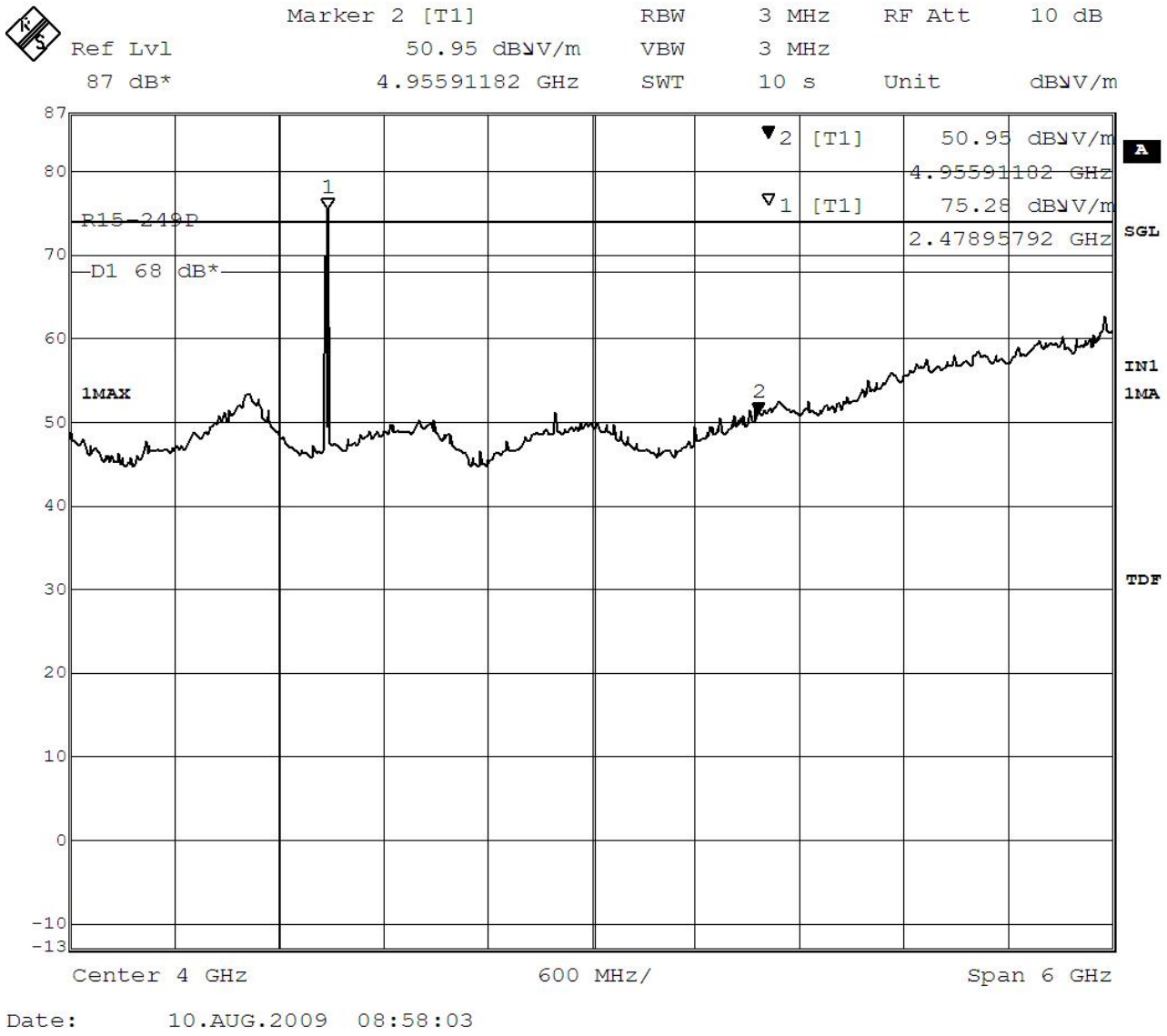


Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2479	70.68	114.00	Peak	Peak
4956	50.85	74.00	Peak	Peak

Remark: Emission Level=Reading.

Test Results of Radiated Emissions: CH3 (2479MHz)

Frequency Range: 1GHz-7GHz (Horizontal)



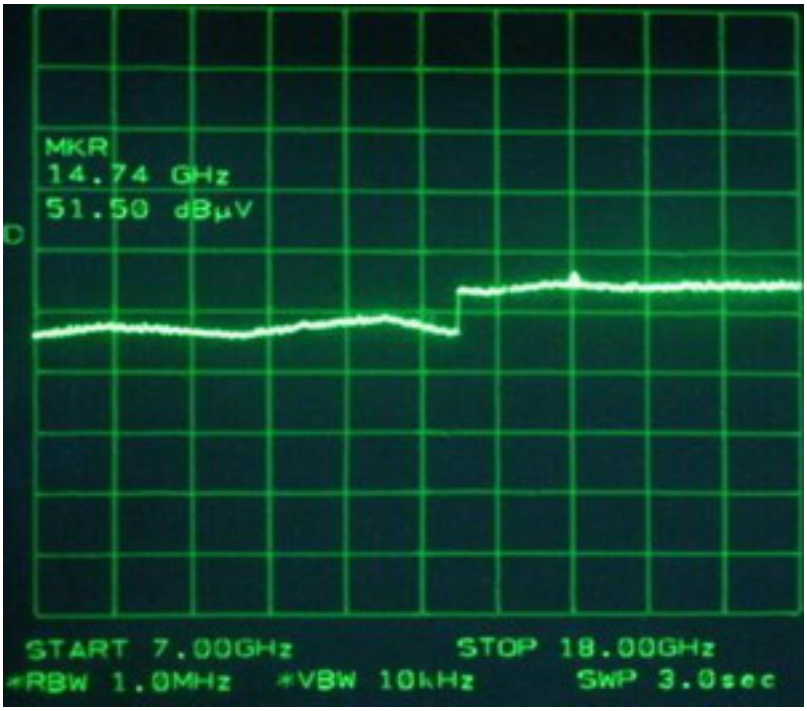
Frequency MHz	Emission Level dB µ V/m	Limits dB µ V/m	Measurement	Detector
2479	75.28	114.00	Peak	Peak
4956	50.95	74.00	Peak	Peak

Remark: Emission Level=Reading.

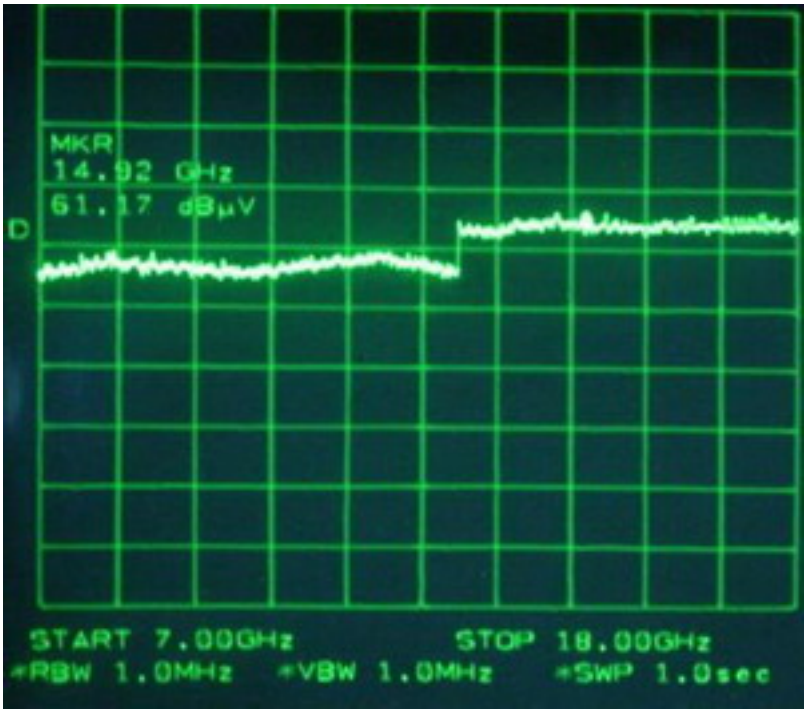
Test Results of Radiated Emissions: CH1 (2404MHz)

Frequency Range: 7GHz-24GHz (Vertical)

Average



Peak

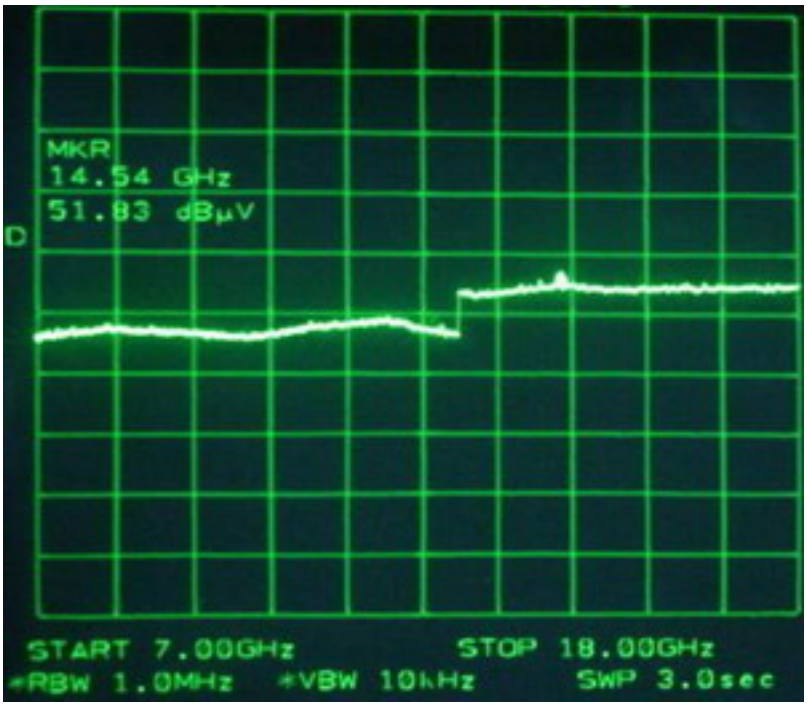


Remark: Emission Level= Reading.

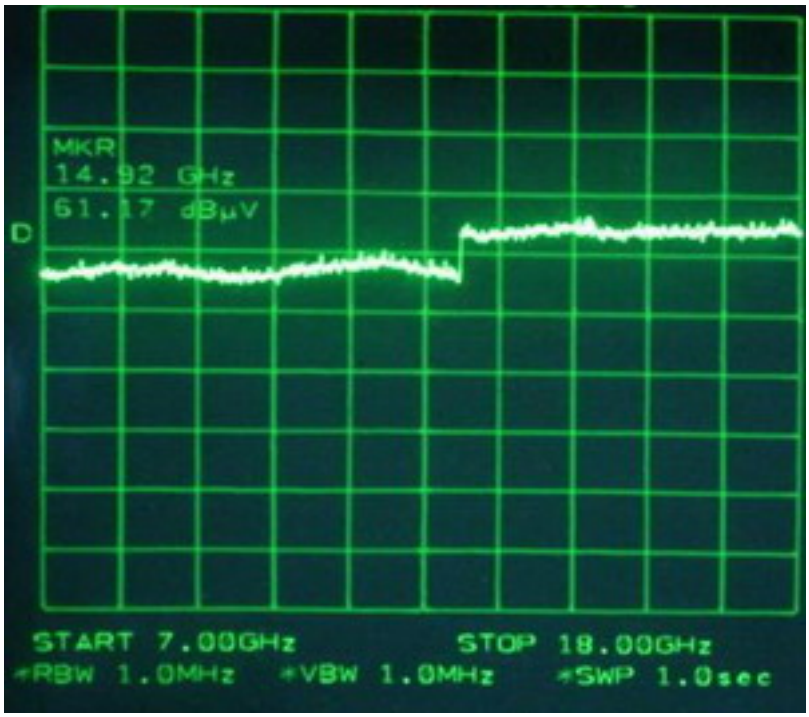
Test Results of Radiated Emissions: CH1 (2404MHz)

Frequency Range: 7GHz-24GHz (Horizontal)

Average



Peak

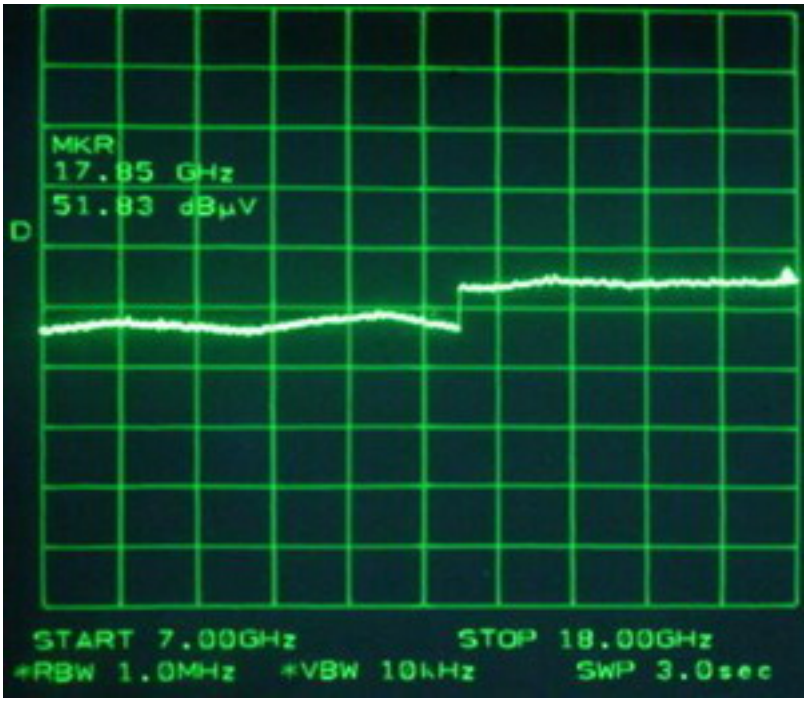


Remark: Emission Level= Reading.

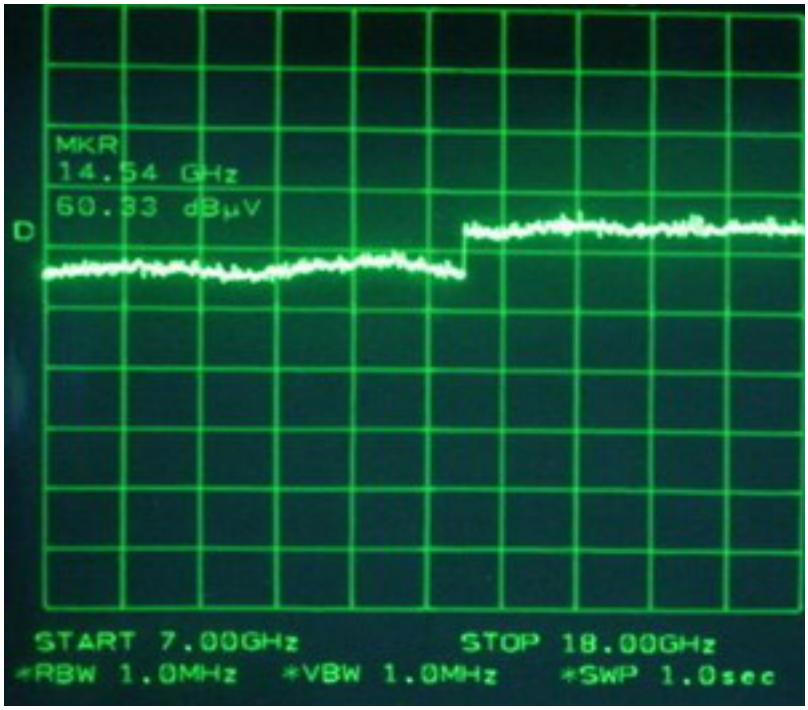
Test Results of Radiated Emissions: CH2 (2444MHz)

Frequency Range: 7GHz-24GHz (Vertical)

Average



Peak

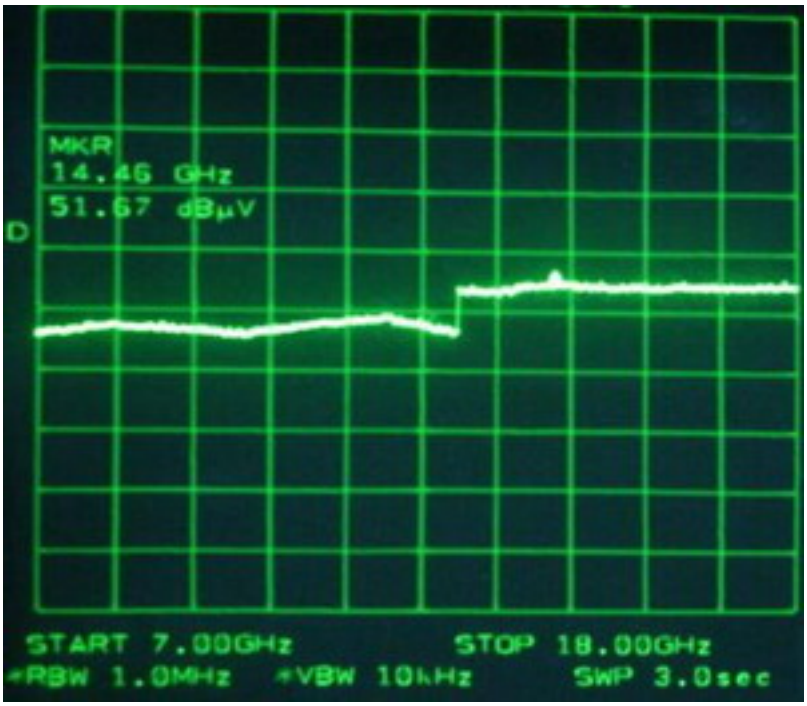


Remark: Emission Level= Reading.

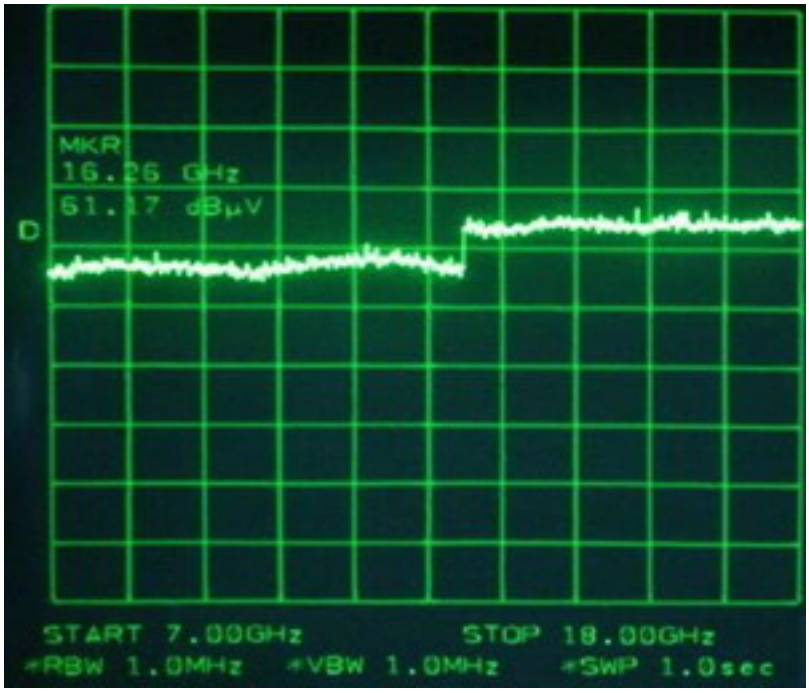
Test Results of Radiated Emissions: CH2 (2444MHz)

Frequency Range: 7GHz-24GHz (Horizontal)

Average



Peak

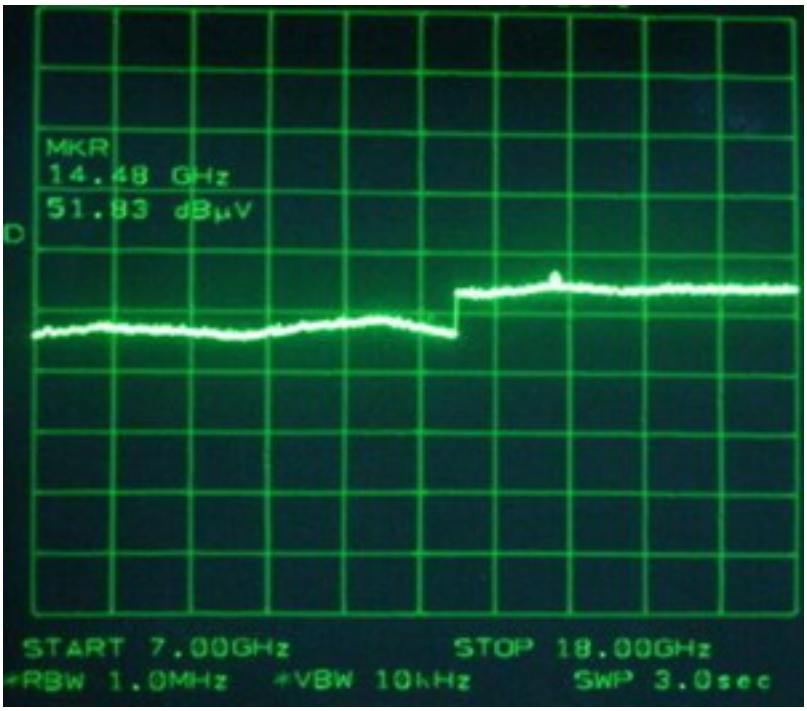


Remark: Emission Level= Reading.

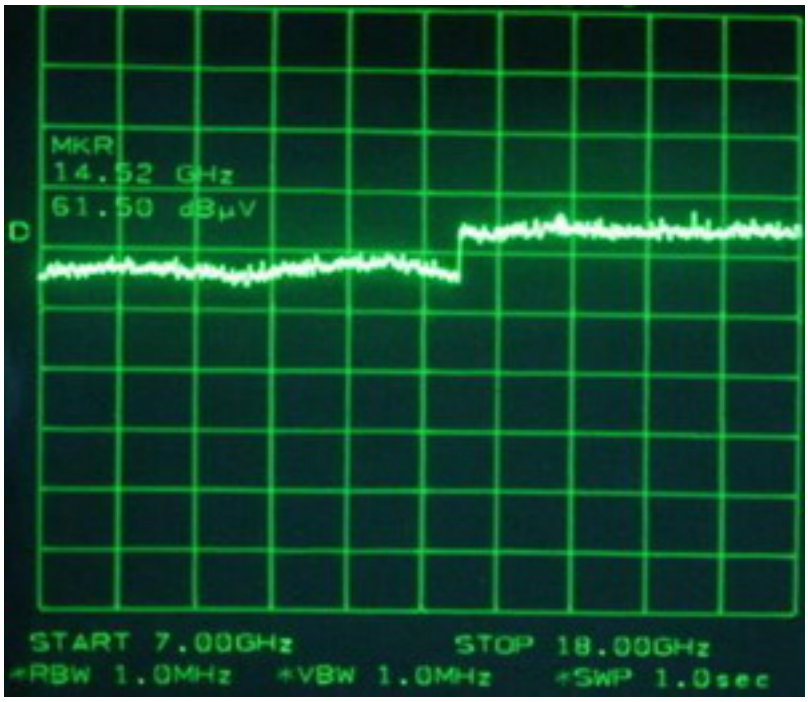
Test Results of Radiated Emissions: CH3 (2482MHz)

Frequency Range: 7GHz-24GHz (Vertical)

Average



Peak

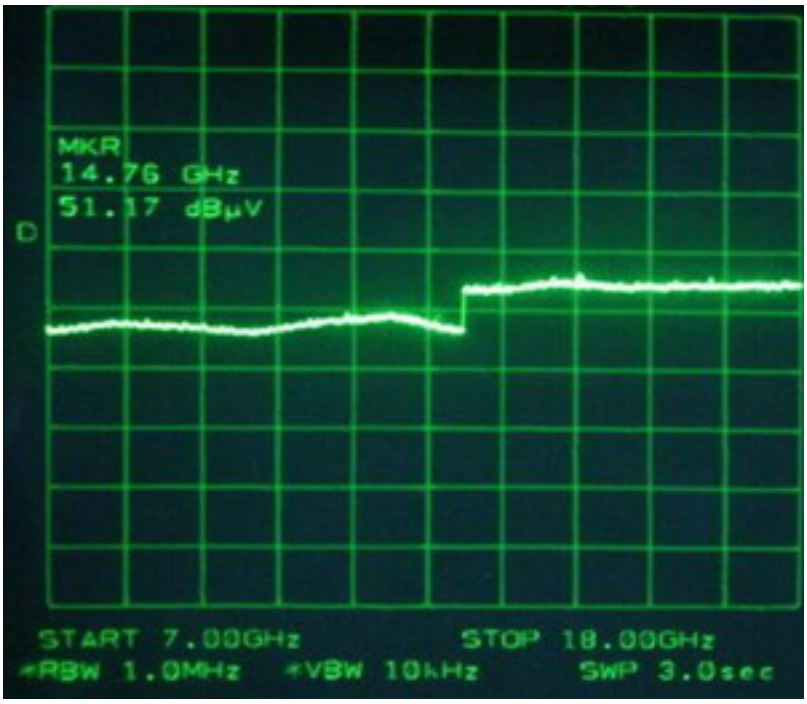


Remark: Emission Level= Reading.

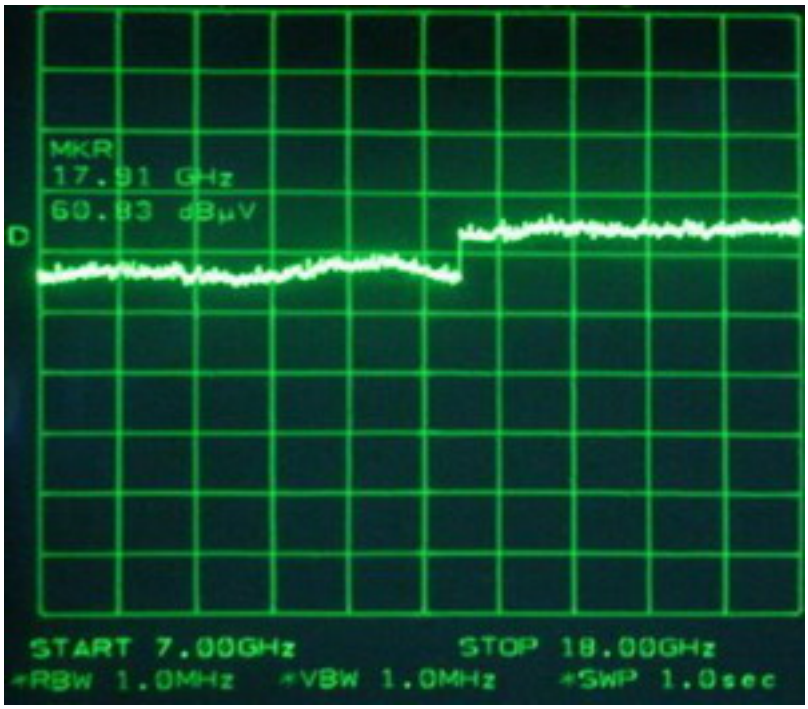
Test Results of Radiated Emissions: CH3 (2482MHz)

Frequency Range: 7GHz-24GHz (Horizontal)

Average



Peak



Remark: Emission Level= Reading.

5. Band Edge Measurement

Test requirement:	FCC 47CFR 15.249(d)
Test date:	2009-08-07
Environment condition:	Temperature:22.0 °C, Humidity: 56.0 %RH, Pressure: 101.0kPa
Conclusion:	Pass

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Due date
1	EMI Receiver	R&S	ESIB7	2009/03/28	2010/03/27
2	Antenna	Xibao	GH18H	2009/05/23	2010/05/22
3	HF Cable	Xibao	/	2009/05/23	2010/05/22
4	3m anechoic chamber	ETS	RFD-F-100	2009/05/23	2010/05/22
5	Shielding Room	ETS	RFD-100	2009/05/23	2010/05/22

5.2. Test Procedure

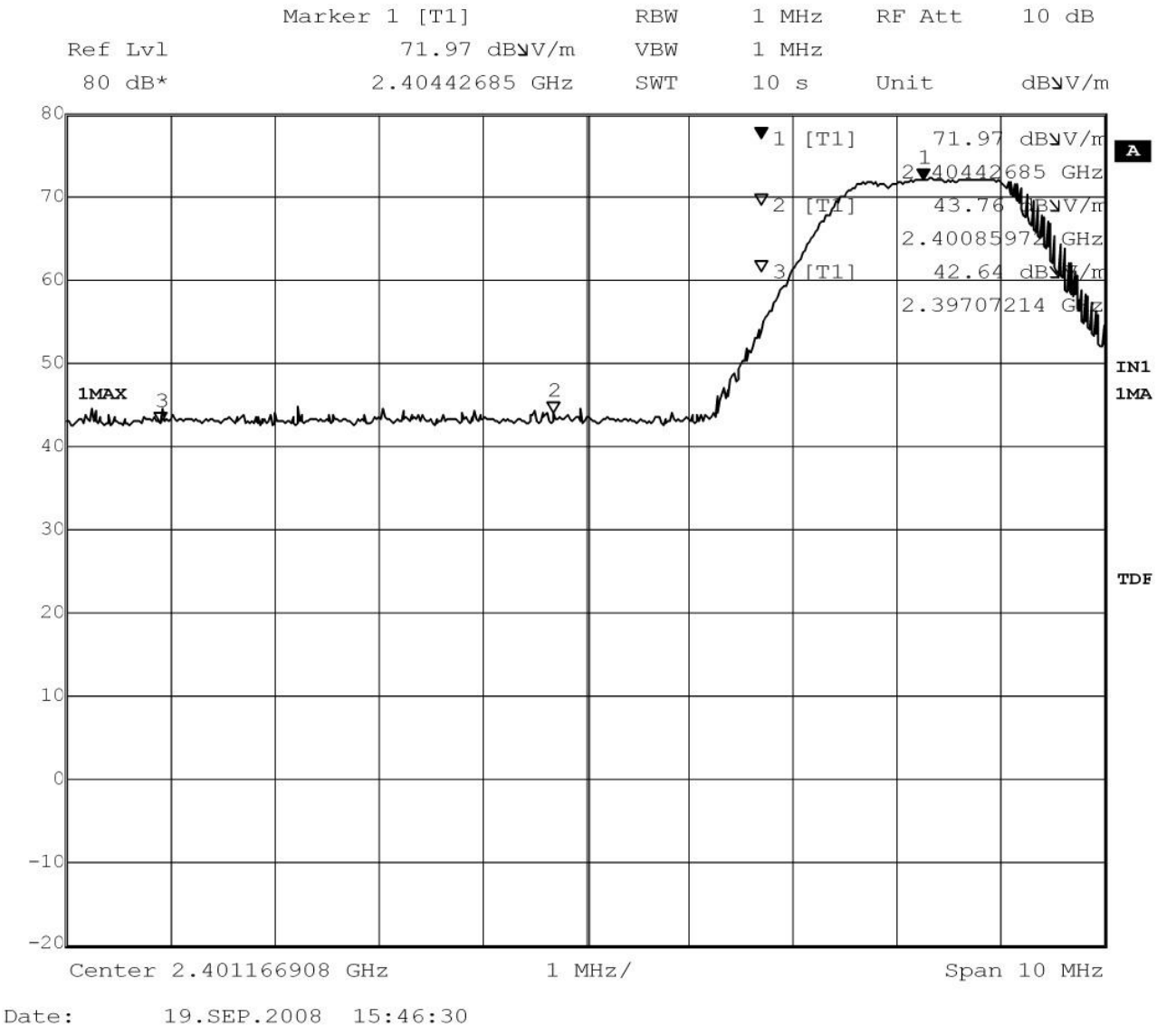
Set spectrum analyzer to 100 kHz RBW, 300kHz VBW and 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge.

This test was performed with antenna in horizontal and the maximum value would obtain in the position. The band edges was measured and recorded in Test Results of the following pages.

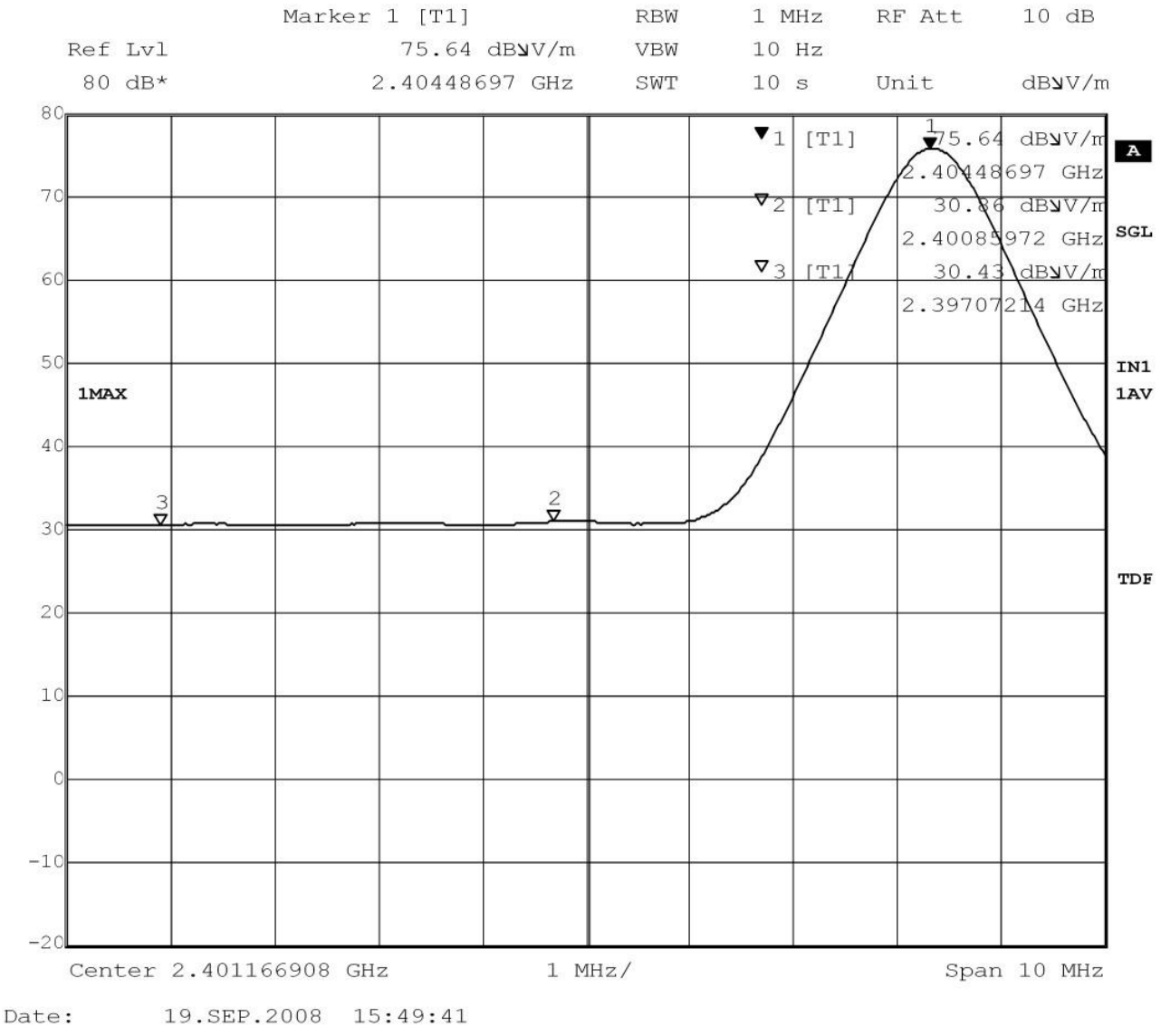
5.3. Limits and Test Results

50 dB below the level of the fundamental or to the general radiated emission limits in section 15.209.

Test Result of band edge of CH1: 2407MHz(Peak)

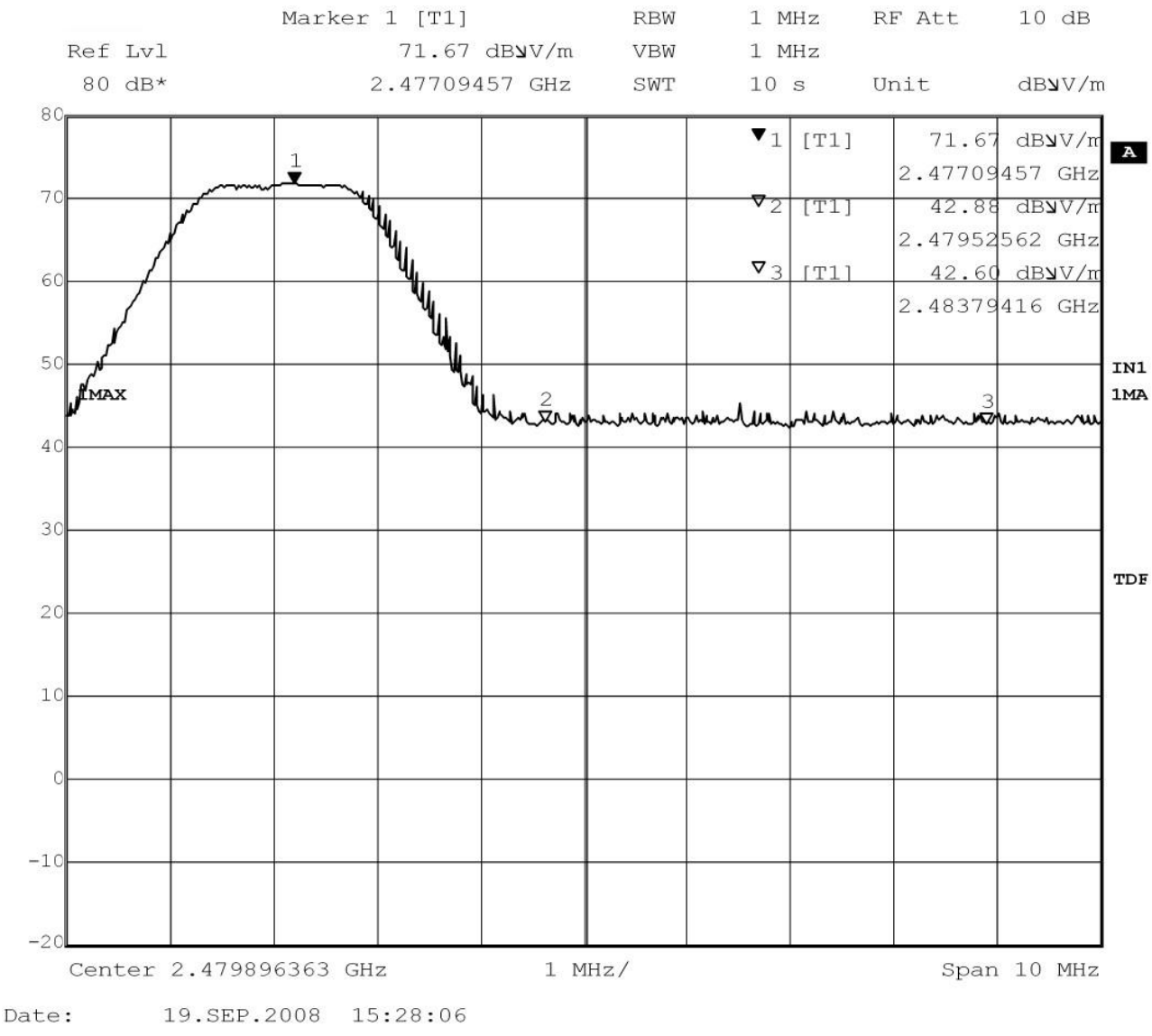


Test Result of band edge of CH1: 2407MHz(Average)



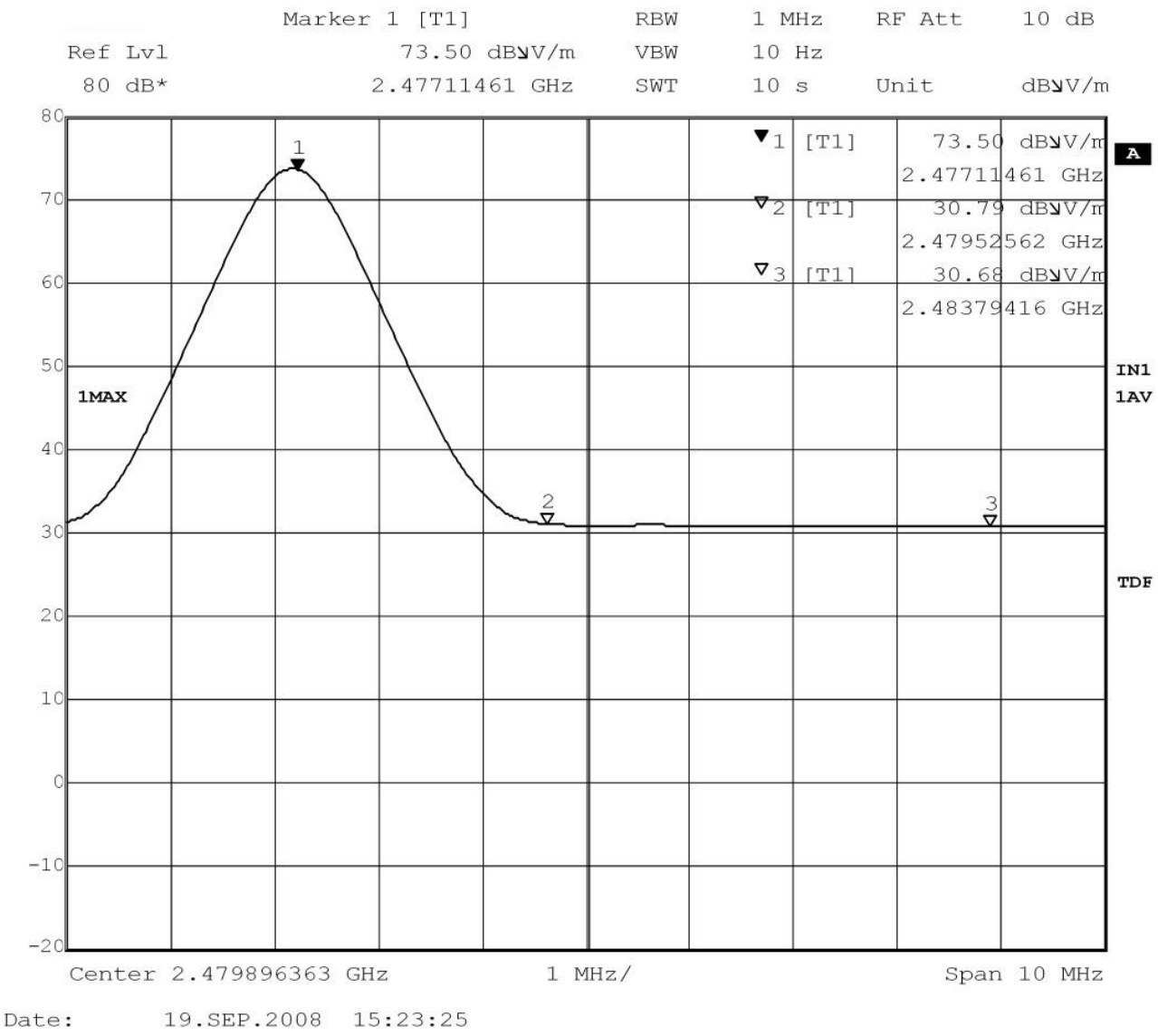
Test Result of band edge of CH3: 2479MHz(Peak)

.



Test Result of band edge of CH3: 2479MHz(Average)

.



6. 20dB Bandwidth Measurement

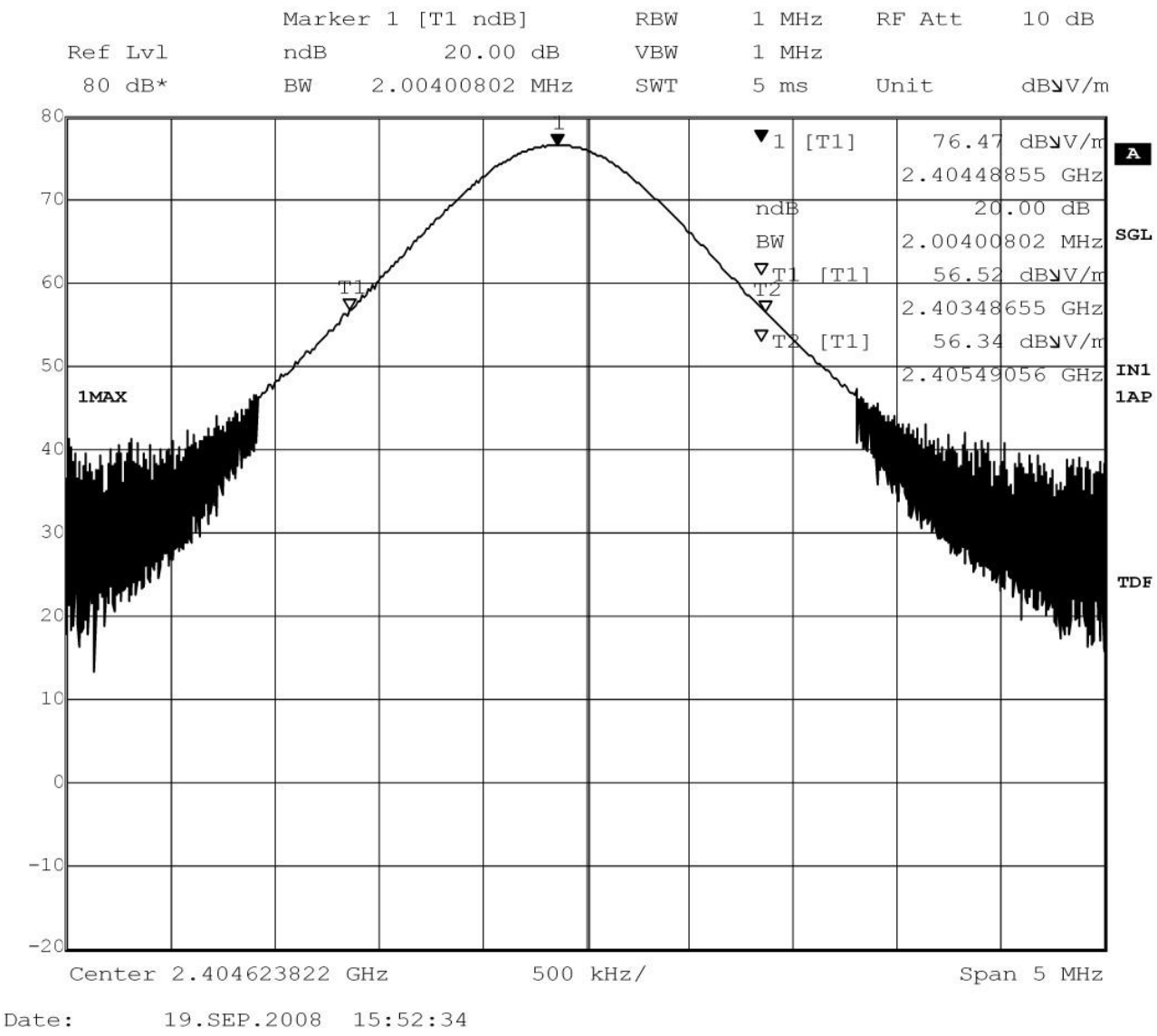
Test requirement:	FCC 47CFR 15.215(c)
Test date:	2009-8-07
Environment condition:	Temperature:22.0 °C, Humidity: 56.0 %RH, Pressure: 101.0kPa
Conclusion:	Pass

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Due date
1	EMI Receiver	R&S	ESIB7	2009/03/28	2010/03/27
2	Antenna	Xibao	GH18H	2009/05/23	2010/05/22
3	HF Cable	Xibao	/	2009/05/23	2010/05/22
4	3m anechoic chamber	ETS	RFD-F-100	2009/05/23	2010/05/22
5	Shielding Room	ETS	RFD-100	2009/05/23	2010/05/22

6.2. Test result

Test Result of 20dB Bandwidth of CH1: 2407MHz



Test Result of 20dB Bandwidth of CH2: 2443MHz

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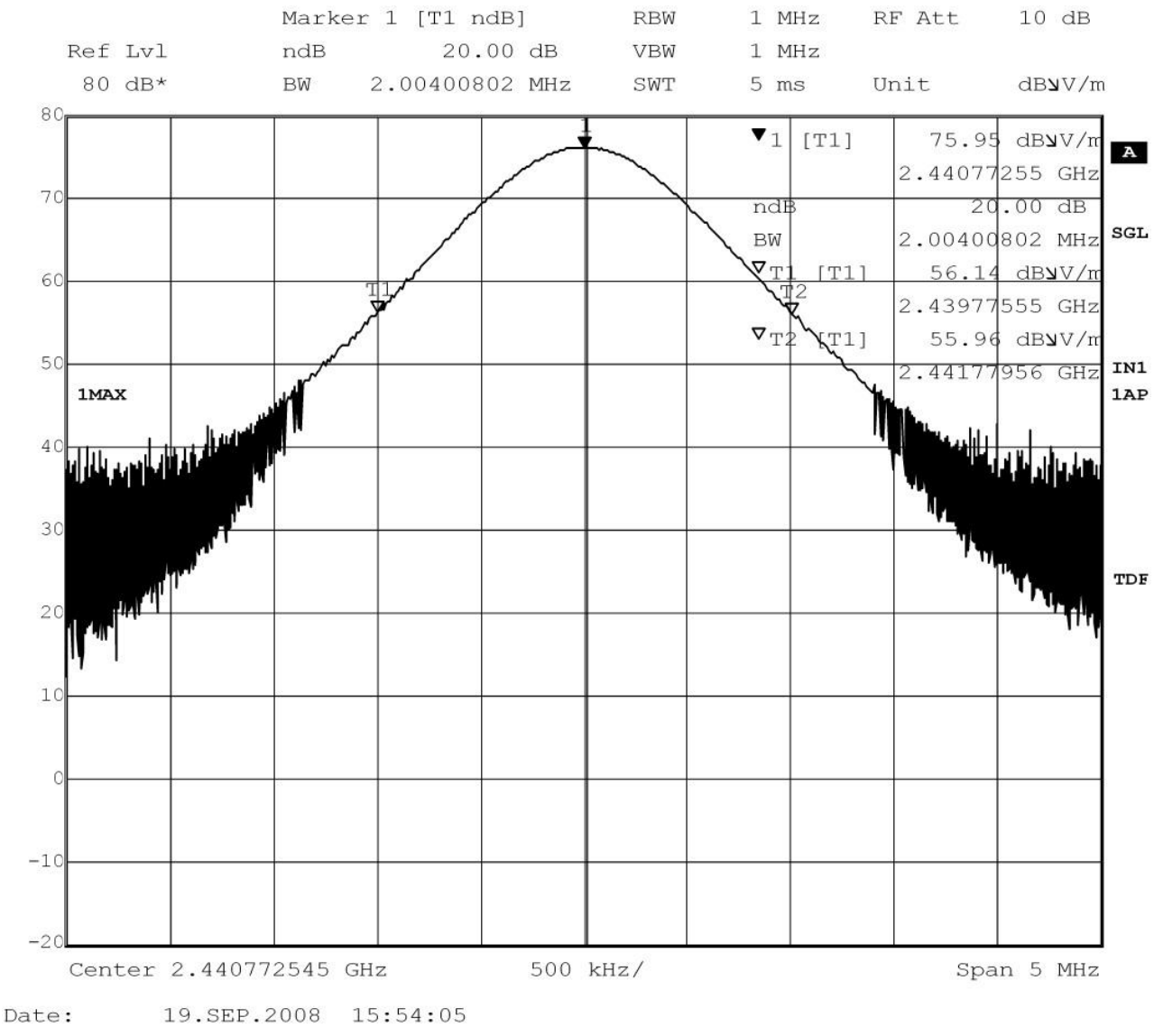
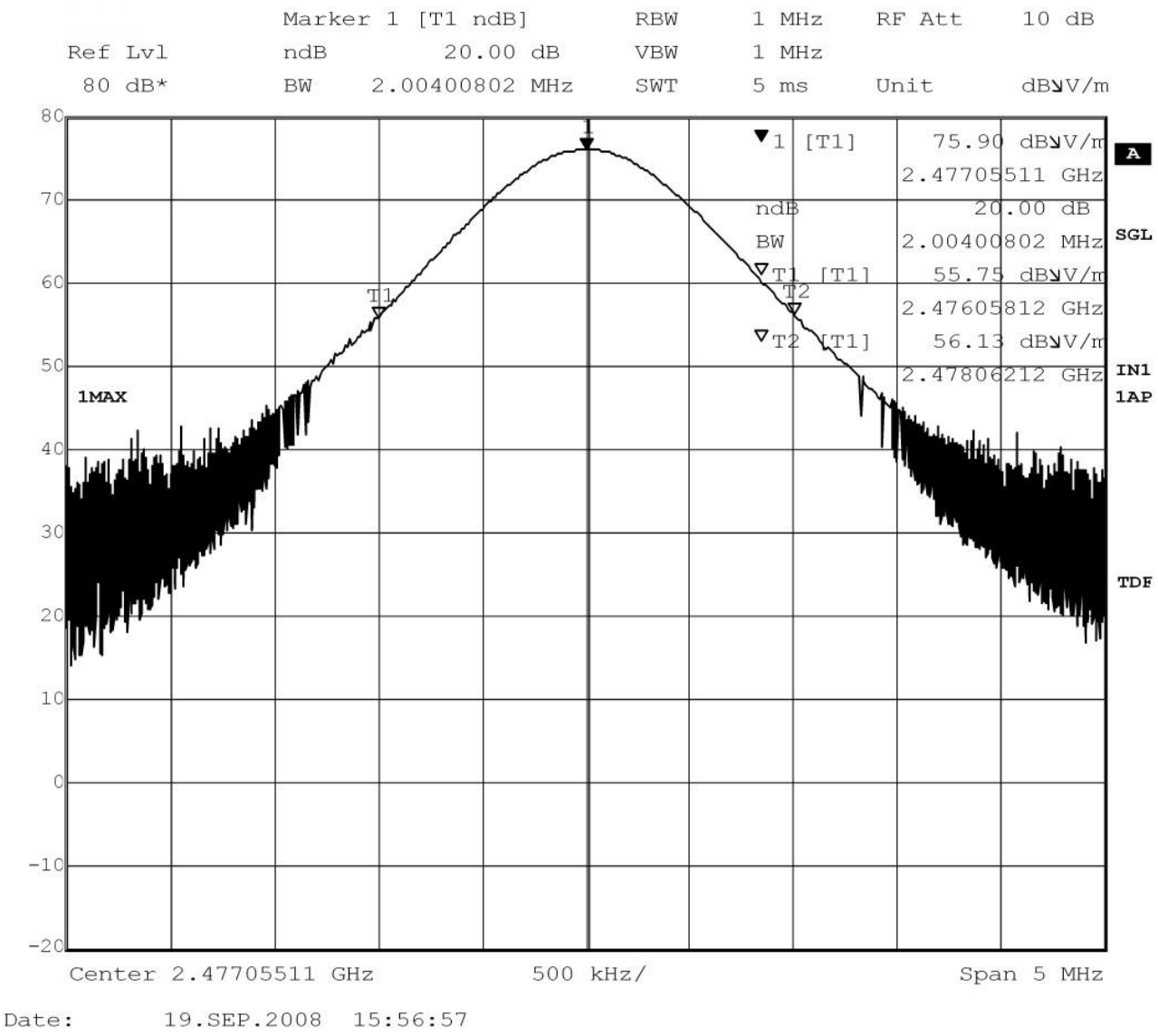


Test Result of 20dB Bandwidth of CH3: 2479MHz

.



*******End of Test Report*******